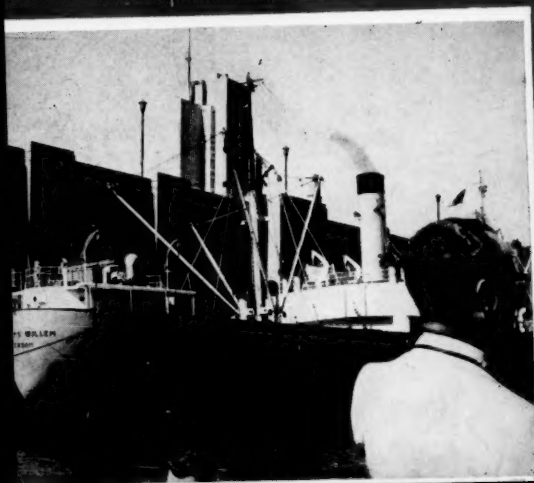


Chemical Week

August 3, 1957

Price 35 cents



Congress takes over AEC spending, drafts first itemized atomic construction bill p. 21

◆ Buildup on Windy City waterways: Boat trip spotlights Chicago industrial growth p. 30

Will Canada ease Red China trade restrictions? All the signs this week say yes p. 40

◆ Ready-mixes sweeten flavor sales. Dry-flavor makers find big potential in convenience foods . . p. 78

Demand for adipic acid is bullish, spurred by still-mounting nylon production p. 74

A M C G R A W - H I L L P U

C
ANN ARBOR MICH
513 N 1ST ST
UNIVERSITY MICROFILMS INT
E F POWER
GS

N



NEED **MIBK**



Make **SHELL** your headquarters

Methyl isobutyl ketone is a medium-boiling, active solvent for a wide range of materials used by industry.

In surface coatings of the nitrocellulose and vinyl types, MIBK has excellent solvent characteristics and good tolerance for many hydrocarbon diluents. These same characteristics recommend MIBK for use in lacquer thinners.

As a selective solvent, MIBK is used as an extractant in the manufacture of antibiotics and in the de-oiling of paraffin wax. It finds use, too, as a solvent for synthetic

rubber cements and other adhesives.

MIBK is also used in the manufacture of such products as fungicides, textile coatings, leather finishing, pharmaceuticals, germicides and the denaturing of ethyl alcohol.

Your Shell Chemical representative will gladly discuss your specific solvent needs with you. For your files, write for: *Organic Chemicals*, a catalog of Shell Chemical solvents, resins and intermediates.

SHELL CHEMICAL CORPORATION
CHEMICAL SALES DIVISION 380 Madison Avenue, New York 17, New York

Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited • Montreal • Toronto • Vancouver



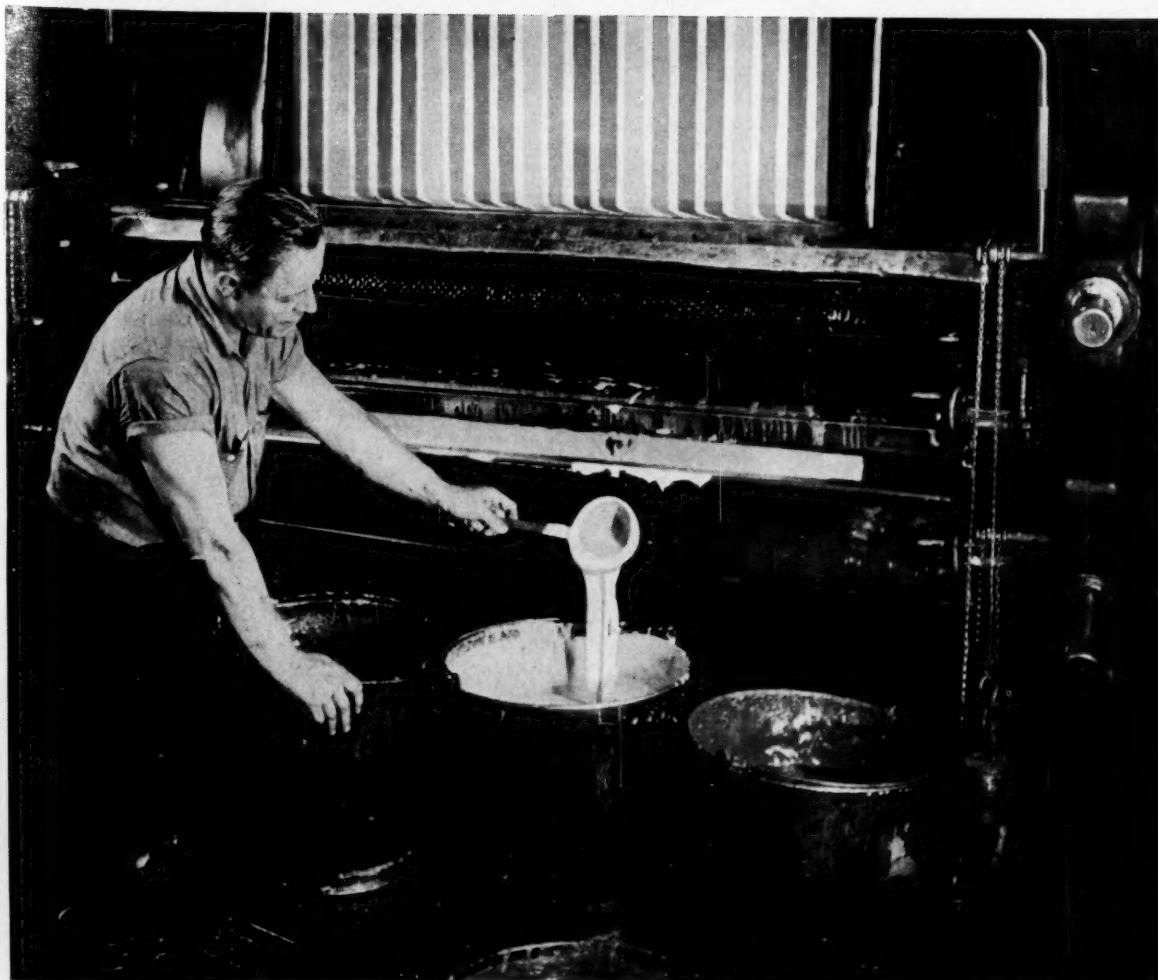


Photo courtesy Beacon Piece Dyeing & Finishing Co., Inc., Beacon, N. Y.

How to set the pace in fastness

A significant advance in textile printing occurred with the advent of resin-bonded pigments. These new colors permitted striking patterns in brilliant shades with excellent fastness to sunlight, atmospheric fumes, washing and dry cleaning. But they still left something to be desired on crocking.

Today's solution is one in which CHEMIGUM LATEX—the lighter-colored nitrile latex—plays a major role. Easily modified with other materials and mixed into the colors at the printer's, CHEMIGUM LATEX helps form a protective coating which locks in the pigment particles. The end result sets the current pace in fastness to crocking plus even further improving resistance to washing.

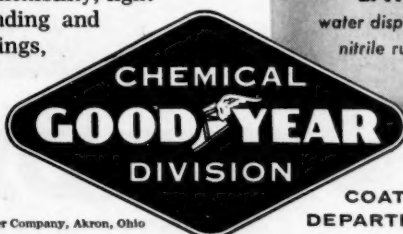
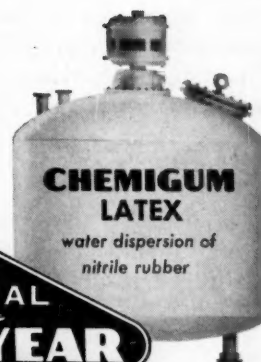
Putting a liquid lock on pigment colors is just one of many uses for CHEMIGUM LATEX in the textile industry. Its high binding strength, flexibility, light color and permanence plus ease of handling, compounding and applying are finding wide application in binders, coatings, finishes and adhesives of all types.

For full information, including the latest *Tech'Book Bulletins*, on how CHEMIGUM LATEX can improve textile—or paper or leather—products, just write to: Goodyear, Chemical Division, Dept. H-9417, Akron 16, Ohio.

Chemigum, Plioflex, Pliolite, Plio-Tuf, Pliovic—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

CHEMIGUM • PLIOFLEX • PLIOLITE • PLIO-TUF • PLIOVIC • WING-CHEMICALS

High Polymer Resins, Rubbers, Latexes and Related Chemicals for the Process Industries



**COATINGS
DEPARTMENT**

GIRDLER building expanded facilities for Goodrich-Gulf Chemicals, Inc.

At its plant at Institute, W. Va., Goodrich-Gulf is making another major expansion of facilities for man-made rubber—already accounting for over half of America's rubber usage.

Girdler is engineer-constructor for this project, including a new power plant and a "cold" rubber production line.

Take advantage of Girdler's experience and complete design-engineering-construction service for *your* expansion or modernization of processing facilities.



The **GIRDLER** Company

A DIVISION OF NATIONAL CYLINDER GAS COMPANY

LOUISVILLE 1, KENTUCKY

GAS PROCESSES DIVISION . . . Offices: New York, San Francisco

- ▶ **Chemicals in foods** is again the subject of sharp debate. Charges of laxity levelled at FDA hearings last weekp. 22
- ▶ **Six ways to boost productivity of engineers** are set down in newly completed Harvard management surveyp. 46
- ▶ **Contract maintenance firms broaden scope of their services.** Here's what they offer chemical process companies ..p. 52
- ▶ **Spray-dried flavors** are claiming a bigger slice of business each year. Providing the latest boost: soda-pop powders ...p. 78

8 OPINION

12 MEETINGS

17 BUSINESS NEWSLETTER

21 Joint Senate-House Committee is studying an atomic energy program after wresting control of new expenditures from the AEC. Here's the outlook for private development.

23 Michigan Chemical is getting into petrochemicals. It has bought a going business from Swan Finch Oils.

Hottest thing in the stock market last week was the issuance of Carter Products' first shares.

Giant General Dynamics is interested in chemicals. It's talking merger with Liquid Carbonics, Inc.

24 The Justice Dept. is suing to dissolve El Paso Natural Gas Co.'s acquisition of Northwest Pipelines, Inc.

Farbenfabriken Bayer is making strides in Argentina. The government has signed a treaty that would permit Bayer to recover its aspirin trademark.

27 WASHINGTON NEWSLETTER

28 CHARTING BUSINESS

30 ADMINISTRATION

Boat trip for executives spotlights process-industry buildup at Chicago.

40 SALES

Canada may be next free-world nation to increase trade with Red China.

42 Palletless warehousing is adopted by Procter & Gamble for wide range of products.

44 Bulk delivery, on-the-spot bagging of chemicals will soon be introduced in Britain.

Now: missile fuels blended at filling-station pump.

46 ENGINEERING

50 New production techniques yield big crystals of synthetic mica.

52 PRODUCTION

58 Latest returns on the chemical industry's '56 safety record.

61 TECHNOLOGY NEWSLETTER

64 RESEARCH

Gordon Research Conferees sketch outlook for radiation processing of chemicals.

71 MARKET NEWSLETTER

74 Adipic acid demand is growing, bolstered by increased nylon usage. Nylon today accounts for 85% total adipic consumption.

78 SPECIALTIES

82 Preparing for national distribution of its appetite appeaser, Oragen, Consumer Drugs of Portland hopes to duplicate success in regional markets.

This is
**NATIONAL
NORTHERN**

...newest AP&CC division

*Dedicated to research,
development and production in*
**rocket power
technology**

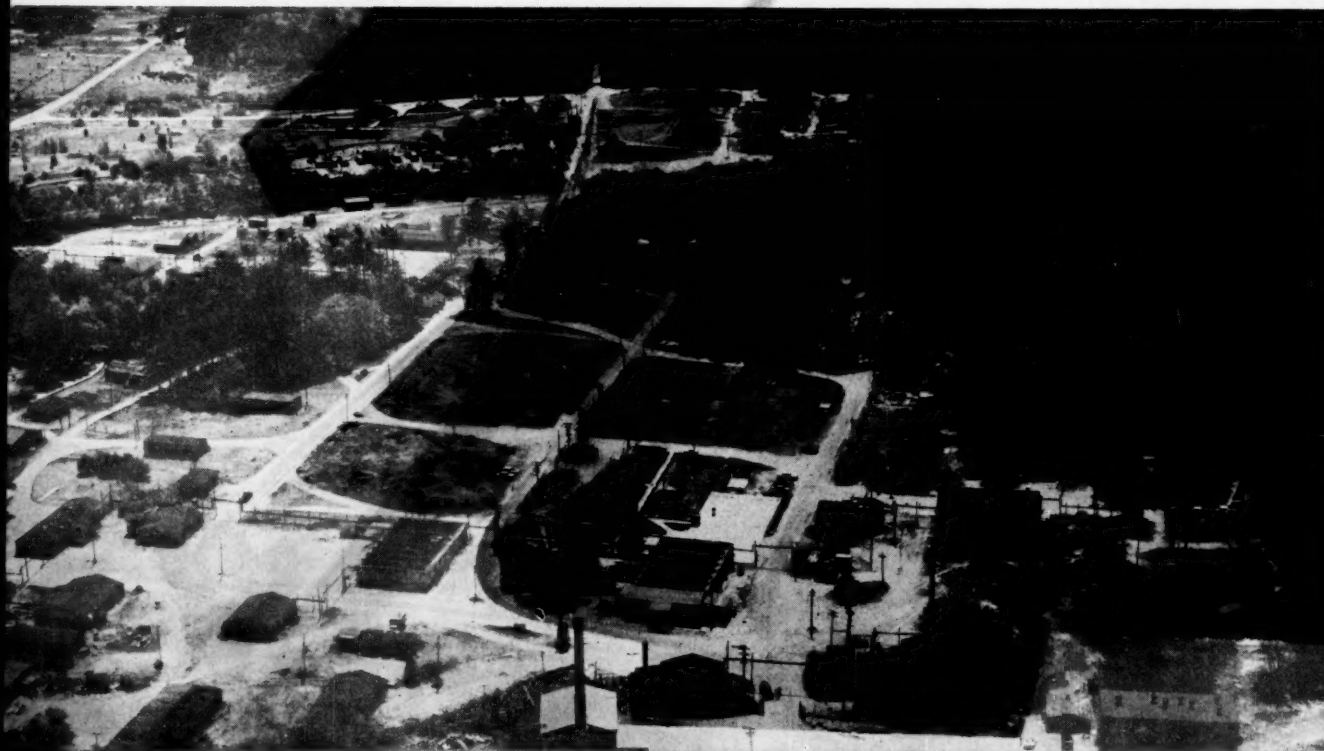


Test a rocket motor's performance at 100,000 feet altitude...determine how extremes of temperature affect explosive and propellant charges...develop igniters of maximum sturdiness and reliability. These are typical activities at National Northern Division, West Hanover, Mass., latest addition to the AMERICAN POTASH family. Here, a qualified staff of scientists and technicians conducts research, development, field testing and production of propellants for rockets and missiles, explosives, pyrotechnics, detonators, igniters, squibs, gas generators, fuzes and other items.

Extreme environmental conditions are simulated in the laboratory or encountered in actual field tests on the firing range at West Hanover or the 1900-acre test range at Halifax, Mass. Here, too, AP&CC will extend its facilities for the investigation and development of TRONA* boron, lithium and perchlorate chemicals in high energy fuels.

For more than ten years National Northern has demonstrated its ability to work in close coordination with others. As an integral part of AMERICAN POTASH & CHEMICAL CORPORATION it is ready to go to work for you!

We invite inquiries leading to research and production contracts.



NATIONAL NORTHERN'S CURRENT FIELDS OF ACTIVITY:

ROCKET-MOTOR-IGNITER DEVELOPMENT • GAS GENERATORS • SURVEILLANCE TESTING OF EXPLOSIVES AND AMMUNITION • EFFECT OF ALTITUDE ON PERFORMANCE OF EXPLOSIVES, PROPELLANTS, TRACERS AND INCENDIARY ELEMENTS • DESIGN OF ELECTRIC DETONATORS AND SQUIBS • AIRCRAFT VULNERABILITY TESTS AND EVALUATION • EXPLOSIVE METAL FORMING



American Potash & Chemical Corporation

3030 WEST SIXTH STREET, LOS ANGELES 54, CALIFORNIA
99 PARK AVENUE, NEW YORK 16, NEW YORK

NATIONAL NORTHERN DIVISION
P.O. BOX 175, WEST HANOVER, MASSACHUSETTS

*TRADEMARK AP&CC

Chemical Week

Publisher Wallace F. Traendly
Editorial Director Sidney D. Kirkpatrick
Editor-in-Chief Howard C. E. Johnson
Managing Editor Ralph R. Schulz
Assistant Managing Editor William Olcott

ASSOCIATE EDITORS

Donald P. Burke Anthony J. Piombino J. Robert Warren

DEPARTMENTS

Administration Homer Starr, *editor*; Leo J. Northart
Business News Cooper R. McCarthy, *editor*; Robert L. Porter
Engineering Kenneth C. Wilsey, *editor*; Philip A. Untersee
Markets Jorma Hyypia, *editor*; Frank S. Sciancalepore
Production Herbert C. Short, *editor*
Reports Vincent L. Marsilia, *editor*
Research Joseph F. Kalina, *editor*; Sanford J. Durst
Sales John M. Winton, *editor*
Specialties Richard J. Callahan, *editor*; Charles Joslin
Buyers' Guide Mary C. Folsom, *editor*
Copy William Mullinack, *editor*
Art R. D. S. Marshall, *director*; Peter Madden

REGIONAL EDITORS

Midwest ... Frank C. Byrnes, Chicago
Far West ... Emil J. Mikity, San Francisco
Southwest ... James A. Lee, Houston

EDITORIAL ASSISTANTS

Patricia Licursi Frances Regan
 Nina Seawick Eleanor Sternecker
 E. L. Sisley

NATIONAL NEWS

Economics Dexter M. Keezer, *director*
Atlanta Charles T. Dixon
Cleveland William Meldrum
Dallas Kemp Anderson, Jr.
Detroit Donald MacDonald
Los Angeles John Shinn
San Francisco Margaret Ralston
Washington George B. Bryant, Jr.

Correspondents in 75 principal cities.

WORLD NEWS

Editor John Wilhelm
Beirut O. M. Marashian
Bonn Morrie Helitzer
London William J. Coughlin
Melbourne Alicia Grobtuch
Mexico City John H. Kearney
Paris Robert E. Farrell
Rio de Janeiro Peter Weaver
Tokyo Dan Kurzman

Correspondents in 51 principal cities.

Circulation Manager Paul W. Erb



Advertising Sales Manager Robert S. Muller

Business Manager Alvin J. Babbow **Promotion Manager** Fred E. Lesner
Advertising Makeup Robert L. Maier **Market Service** Irene Montz
Advertising Salesmen See page 88

AUGUST 3, 1957

VOL. 81, NO. 5

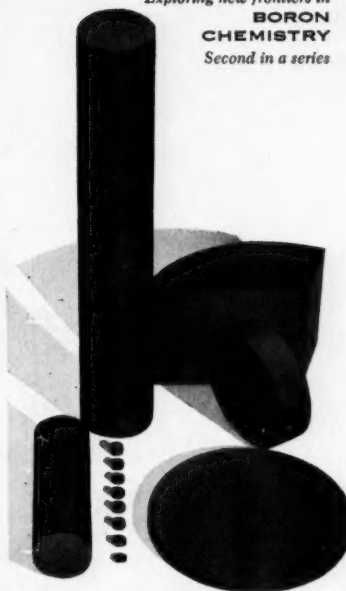
Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder, Executive, Editorial, Circulation and Advertising offices; McGraw-Hill Building, 330 West 42nd St., New York 36, N. Y. Publication office: 1309 Noble St., Philadelphia 23, Pa. See panel below for directions regarding subscriptions or change of address. Donald C. McGraw, President; L. Keith Goodrich, Vice-President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising Sales; A. R. Venesian, Vice-President and Circulation Coordinator.

Subscriptions to Chemical Week are solicited from management men in the chemical process industries. Position and company connection must be indicated on subscription order. Send to address shown in panel below. United States, United States Possessions and Canadian subscription rate for individuals in the field of the publication, \$3 per year; single copies, 35¢. Foreign subscription rates per year: Western Hemisphere countries, \$15; all others, \$25, payable in advance. Second-class mail privileges authorized at Philadelphia, Pa. Printed in U.S.A. Title registered in U.S. Patent Office. © Copyright 1957 by McGraw-Hill Publishing Co., Inc. All rights reserved.

Send subscription correspondence and change of address to Subscription Manager, Chemical Week, 330 West 42nd St., New York 36, N. Y. Subscribers should notify Subscription Manager promptly of any change of address, giving old as well as new address and including postal zone number, if any. If possible, enclose an address label from recent issue of Chemical Week. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Chemical Week, 330 West 42nd St., New York 36, N. Y.

Exploring new frontiers in
BORON
CHEMISTRY
 Second in a series



BORON SHAPES for control rods and shielding in nuclear reactors, supplied through our National Northern Division, West Hanover, Mass.

ELEMENTAL BORON

To meet your growing requirements, TRONA® offers a versatile selection of these standard and special grades...

STANDARD 90-92%
 AMORPHOUS

SPECIAL HMG
 HIGH MAGNESIUM

SPECIAL MGR
 MAGNESIUM REACTIVE

SPECIAL NAR
 SODIUM REACTIVE

HPA 95-97% HIGH PURITY AMORPHOUS

The selectivity available to you with Trona Elemental Boron is the natural result of AP&CC's long pioneering leadership in Boron Chemistry. If you're concerned with the many new development possibilities of Elemental Boron — its Ordnance uses, high temperature applications or nuclear aspects — we suggest you call your nearest Trona representative, or write

MARKET
 DEVELOPMENT
 DEPARTMENT



**American Potash
 & Chemical Corporation**

3030 West Sixth Street | 99 Park Avenue
 Los Angeles 54, Calif. | New York 16, New York

THE BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES



Life on the Chemical Newsfront

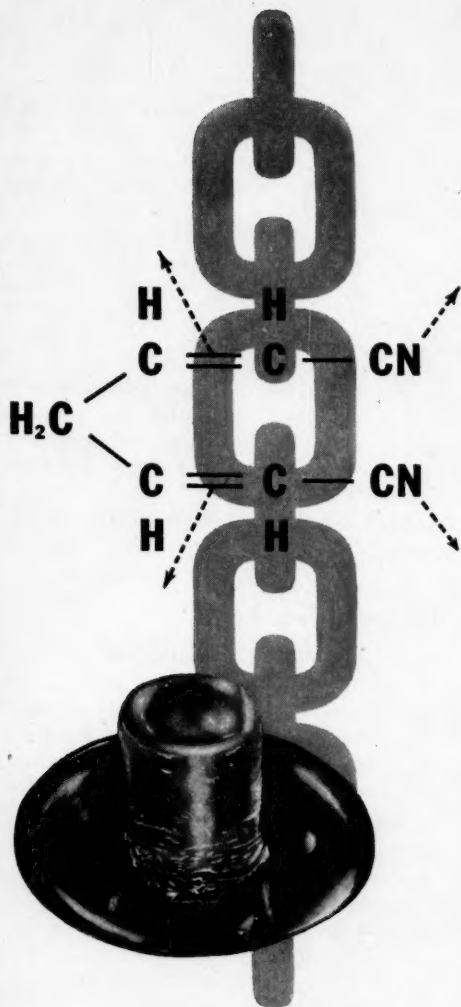
MANY NEW DYES for fashion and utility fibers have been developed by using Cyanamid's cyanuric chloride as a linking agent for established dyestuffs and intermediates. Three reaction centers permit an expanded range of possible products. It also reacts effectively as a cross-linking agent with functional groups which are normally relatively inactive. Many triazine derivatives have excellent affinity for vegetable fibers, permitting colorless intermediates to be applied on the fibers for subsequent diazotization.

(Industrial Chemicals Division, Dept. D)

NEW PIPE JACKET COMBATS UNDERGROUND CORROSION. Strong jackets of spirally-wrapped glass cloth and LAMINAC® Polyester Resin combat corrosion of pipe in new prefabricated insulated conduit for underground steam and hot-water systems. The protective two-ply shell is much lighter, less costly and more corrosion-resistant than conventional steel or tar-protected conduit. Insulation is sealed and vapor-proofed at the ends by bonding the cloth-resin shell directly to the bare pipe. Field joints are easily applied at the site.

(Plastics and Resins Division)





WATER STANDS ON END with N,N'-Methylenebisacrylamide as cross-linking agent! This column, 95% water, was transformed from a dilute solution of acrylamide† to a rigid gel when polymerized with a small proportion of N,N'-Methylenebisacrylamide. The gel-forming ability is the basis of a successful engineering treatment of soil. Soluble in water and organic solvents, this reactive bifunctional monomer should be of interest in many applications. Write for the N,N'-Methylenebisacrylamide Bulletin and for a sample.

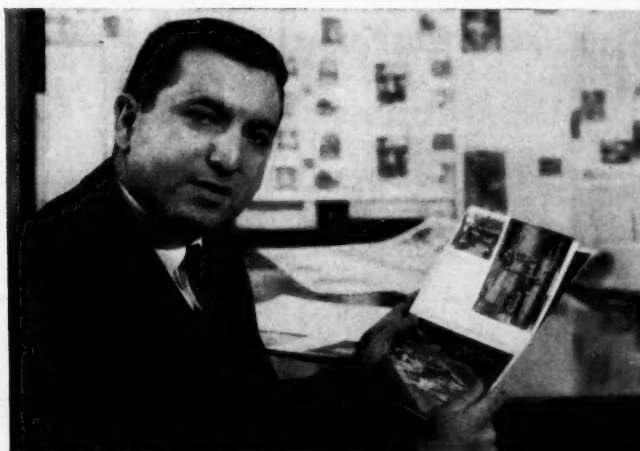
(New Product Development, Dept. D)

† Available from Petrochemicals Department



RUGS ARE NO LONGER "OFF LIMITS" to pets, children and other sources of grimy footprints—at least when they're treated with CYANA® Soil Retardant. The CYANA Finish coats wool, cotton or synthetic fiber with a smooth dirt-repelling finish that has no effect on the appearance or texture of the rug. As a result, normal in-place cleaning removes dirt easily, keeps the rug in "like-new" condition. Rugs also tend to last longer when fibers are free from ground-in dirt.

(Organic Chemicals Division)



MORE AND MORE PRINTERS ARE DISCOVERING the beautiful printing effects now obtainable with whiter, brighter CALCOFLUOR® White treated paper stock. A small amount of CALCOFLUOR White PMS Conc. added during paper manufacture greatly increases black and white contrast, sharpens half-tone detail, improves print legibility and allows for crisp color reproduction. Corporation executives are specifying this new paper quality for annual reports, stationery and business forms. The superlative whitening action of CALCOFLUOR White makes it practical for many other paper and package applications.

®Trademark

(Organic Chemicals Division)

CYANAMID

AMERICAN CYANAMID COMPANY
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Helping America Make Better Use of Its Resources



For further information on these and other chemicals, call, write or wire American Cyanamid Company

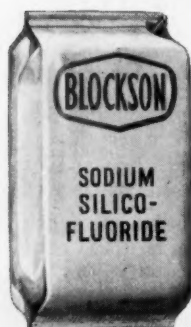
August 3, 1957 • Chemical Week

**Blockson has
the stand-by
capacity to
stand by its**

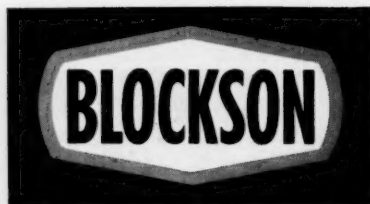
SODIUM SILICO- FLUORIDE customers

**with Blockson as your
SSF supplier you can
PLAN AHEAD SAFELY**

The largest Sodium Silicofluoride manufacturer, Blockson has stand-by capacity PLUS a plant expansion program that builds well ahead of its customers' increasing needs.



P.S. Include SSF with other Blockson chemicals in your mixed-car orders.



BLOCKSON CHEMICAL COMPANY
Division of Olin Mathieson
Chemical Corporation
Joliet, Illinois

FOR DATA SHEET,
TEST SAMPLE,
PRICE OR
CONTRACT
PROPOSAL
CALL BLOCKSON
OR YOUR
BLOCKSON
DISTRIBUTOR

O P I N I O N

Care Prolongs Wear

TO THE EDITOR: Here is one more viewpoint on the controversial issue of dry-cleaning clothes ("Newest Target: Clothes," *March 23*, Dr. Weibush's letter, and Mr. L. E. Francis' letter):

Rather than attributing specific wear and tear of clothes to dry cleaning or any phase thereof, I believe simply that the less one has his clothes cleaned, the longer they will last. As a result, the wearer, ever fearful of soiling or wrinkling his clothes, tends to be more careful while wearing them and he removes and hangs them up the moment he can (e. g., as soon as he gets home from the office, as soon as he or she returns from a party, etc.). Consequently, the widely held belief that dry cleaning contributes to clothes wear no doubt works psychologically to bring about the desired result: longer wear. Measured in months or years of wear, the clothes so treated probably do outlast those that receive normal wearing and cleaning.

This, of course, is no indictment of dry cleaners, it is just to point out the wisdom of avoiding staining your clothes and of wearing them no longer at any one time than is required by decorum.

R. H. DAMON
Alton, Ill.

With Reader Damon's observations, we write finis to the long-continued dry cleaning vs. durability exchange.
—Ed.

Atlanta Salesmen Unite

TO THE EDITOR: It was a real pleasure to see the writeup (*May 11*) on the formation of new chemical sales clubs throughout the country.

Our fine group in Atlanta was conspicuous by its absence . . .

We were formed in July of last year as a result of the fellowship displayed among the group of chemical salesmen who were active in promoting Chemical Progress Week.

We grew from a charter group of nine members and now total 27, and continue to grow. Our club is restricted to representatives of national basic chemical manufacturers and is devoted primarily to good fellowship and social activities. Our principal

current aim is to create interest in scientific careers among high school students, to whom we direct our greatest efforts during Chemical Progress Week.

Although our group [was organized] primarily for . . . social functions, we do get tremendous benefits from associating with other salesmen in the chemical industry.

I noted with interest what you have had to say about the formation of a national chemical club. Our group is very much interested and hopes this will come to pass at some future date. . . .

HOWARD A. LOVEJOY
President

Atlanta Chemical Sales Club, Inc.
Atlanta

Public Too Gullible?

TO THE EDITOR: In view of your interest in FDA and the drug industry, I commend to your attention the excellent editorial in this morning's (*July 25*) *New York Times*. We should all back FDA in its program.

FRANK M. TAYLOR
Paterson, N. J.


Here are excerpts from the editorial referred to by Reader Taylor.—Ed.

"The Food and Drug Administration has begun an educational campaign against door-to-door selling of various food additives and vitamin preparations. Some literature has been prepared for the sixteen regional directors and they will undertake to give it publicity. It is directed at some of the 'myths' about nutrition and vitamin deficiency that are being exploited at the expense of an uninformed public.

"Most conspicuous of the myths, of course, is that there is any critical vitamin deficiency among the Ameri-

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to:
H. C. E. Johnson, Chemical
Week, 330 W. 42nd St., New
York 36, N. Y.



To lower costs . . .
use the sure source of
consistent product quality:
MONSANTO

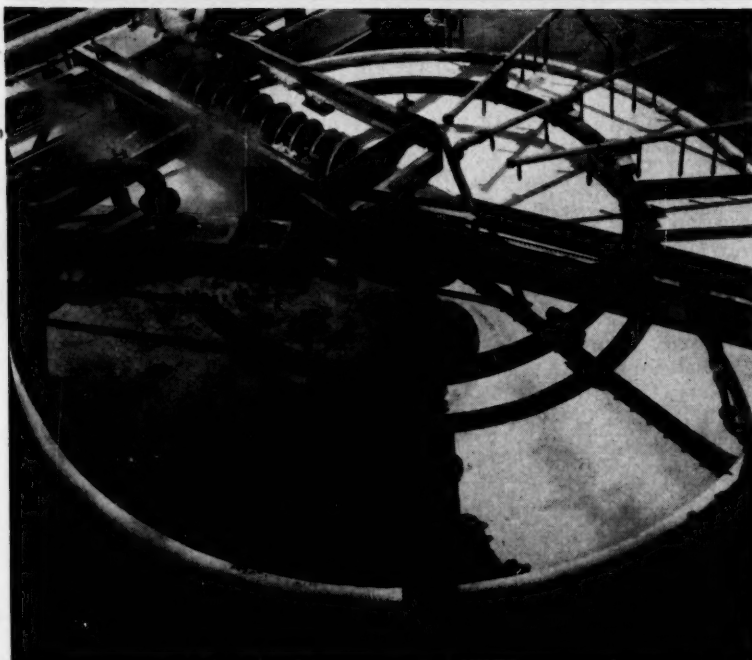
PHOSPHATES

FROM MONSANTO, WORLD'S LARGEST PRODUCER OF ELEMENTAL PHOSPHORUS
SODIUM PHOSPHATES • CALCIUM PHOSPHATES • AMMONIUM PHOSPHATES • POTASSIUM PHOSPHATES • PHOSPHORIC ACID



at **TRONA**

Here's **HIGH CAPACITY** *Filtration & Washing...*



This un-retouched photo dramatically illustrates the fundamental advantages of the Oliver Horizontal Filter. Note the even feed distribution and maximum area utilization . . . without using a filter tank or agitator. Note, too, the fast dewatering of feed and the two stages of counter-current washing in a single pass on the table.

Installed at American Potash and Chemical Corporation's giant Trona, California plant, this Oliver operates around the clock producing agricultural grade potash. One of five Horizontals of the over forty Oliver Filters of various types at Trona, the unit has a wash efficiency of about 90%.

If you have a problem involving high tonnage filtration and washing of any fast settling, free filtering product, the Oliver Horizontal should be at the top of the list for consideration. Write for a copy of Bulletin No. 7201 for more information.

Dorr-Oliver Incorporated, Stamford, Conn.



OPINION

can people. Actually, the diet and vitamin deficiency diseases such as scurvy, pellagra and beriberi are virtually unknown. The usual preferred diet of most Americans is rich in all the needed elements.

"But there has been a violent campaign of high-pressure advertising, radio, television, leaflet, and now door-to-door selling, designed to convince the American that he has some peculiar 'deficiency' that can be remedied only by the purchase of some particular product. If there isn't a real deficiency disease, the exploiters of such products are capable of inventing complaints and adjusting symptoms so that anyone who has an ache or pain, or is just naturally tired, can be made susceptible. . . .

"The Food and Drug Administration has done a good job in regulatory and sometimes punitive measures, but this is not enough. The public must do its share by building up a massive sales resistance to this massive sales approach. One way is to boycott the 'phonies.' They are relatively easy to spot on radio or television by such familiar tags as 'contains twice as many,' 'works three times faster' or 'your money will be refunded.'

"But, more important, an educational campaign needs to stress that no person should buy and use any patented additive or deficiency corrector—or most other patent medicines for that matter—except upon the advice of a reputable physician. . . ."

Union Booster

TO THE EDITOR: I have read with interest the article "Are Engineers Really So Much in Demand?" (*July 13*).

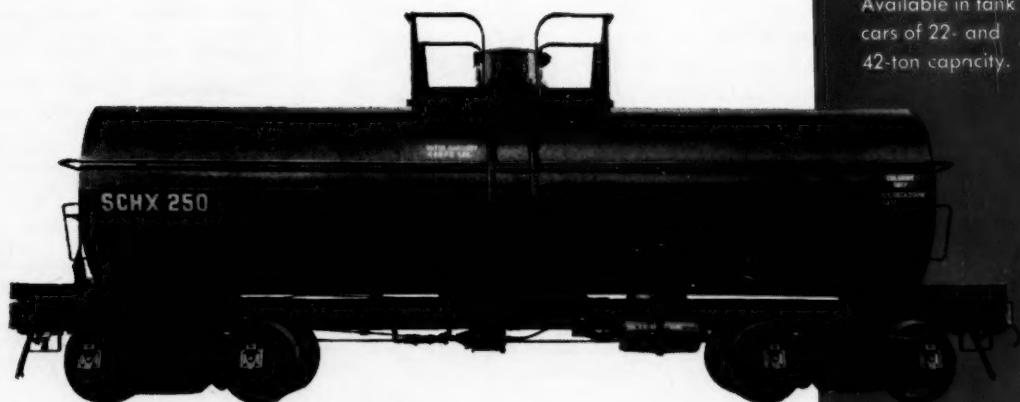
The inference is made that supply and demand should determine the "price" of engineers. It seems to me that, unlike the doctor and lawyer, the engineer is mass-employed in much the same way as the skilled and unskilled worker in industry. The remuneration of these people before the beginning of intensive union activity did not adjust itself by supply and demand, and the adjustment came about as a result of intensive union activity. Why then would not the same apply to the engineer?

R. F. ARNOLDY
Texas Alloy Products Co.
Houston

H F

HYDROFLUORIC ACID
anhydrous and aqueous

**STAUFFER HAS IT...
IN QUANTITY AND QUALITY**



Available in tank
cars of 22- and
42-ton capacity.

STAUFFER CHEMICAL COMPANY

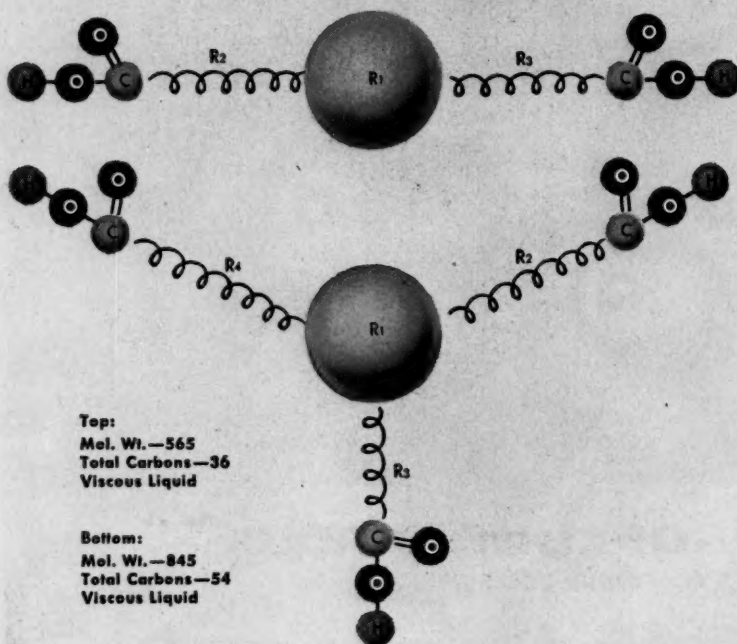
380 Madison Avenue, New York 17, N. Y.

Prudential Plaza, Chicago 1, Ill. • 636 California Street, San Francisco 8, Calif.

NYOTEX CHEMICAL DIVISION, P. O. Box 9716, Houston 15, Tex.



Want a Di- or Polybasic Acid that is DIFFERENT?



Then try EMPOL® POLYMERIZED ACIDS!

Relatively low in cost, these viscous liquids offer a very unusual combination of high molecular-weight and polyfunctionality that should be of extreme interest to manufacturers of resins, polyesters, polymers and similar type materials for many fields of application. Such fields already include adhesives, coatings, corrosion inhibitors, de-emulsifiers, emulsifying agents, films, foams, lube additives, elastomers and surface coatings.

In addition to commercial Empol 1022 which contains 75% dibasic and 22% tribasic acids, Emery offers several "development" grades that are essentially all dibasic or tribasic. This added flexibility of composition offers additional opportunities for research in new fields as well as the fields where the commercial product is already used. Mail coupon below for complete literature on Emery Polymerized Acids.



Organic Chemical
Sales Department

Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio

Emery Industries, Inc., Dept. I-8, Carew Tower, Cincinnati 2, Ohio

Please send literature on Emery Polymerized Acids. I am especially interested in ☐ dibasic, ☐ polybasic materials for.....

Name..... Title.....

Company.....

Address.....

City..... State.....

MEETINGS

Denver Research Institute, Metallurgy Division, 6th annual conference on industrial applications of X-ray analysis, Albany Hotel, Denver, Aug. 7-9.

American Institute of Chemical Engineers, and the American Society of Mechanical Engineers, 1st national conference on heat transfer, Pennsylvania State University, University Park, Pa., Aug. 12-15.

Northwestern University conference on liquid scintillation counting, Technological Institute, Evanston, Ill., Aug. 20-22.

American Soybean Assn. and National Soybean Processors Assn., annual meeting, Leamington Hotel, Minneapolis, Aug. 26-28.

Fisk University, 8th annual infrared spectroscopy institute, Nashville, Aug. 26-30.

Instrument Society of America, international symposium on gas chromatography, Kellogg Center for Continuing Education, East Lansing, Mich., Aug. 28-30.

National Agricultural Chemicals Assn., annual meeting, The Essex and Sussex, Spring Lake, N. J., Sept. 4-6.

Instrument Society of America, 12th annual instrument automation conference and exhibit, Auditorium, Cleveland, Sept. 9-13.

Technical Assn. of the Pulp and Paper Industry, testing conference, Hotel Shoreham, Washington, Sept. 11-13.

Chemical Market Research Assn., annual resort meeting; theme: impact of St. Lawrence Seaway on chemical industry; Lake Placid Club, Lake Placid, N.Y., Sept. 15-17.

International Union of Leather Chemists Societies, 5th conference, Rome, Italy, Sept. 15-20.

National Bureau of Standards, free-radicals symposium, Washington, Sept. 18-20.

Drug, Chemical and Allied Trades Section of the New York Board of Trade, 67th annual meeting, Galen Hall, Wernersville, Pa., Sept. 19-21.

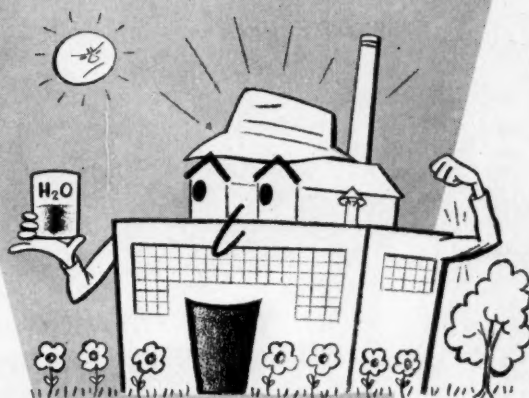
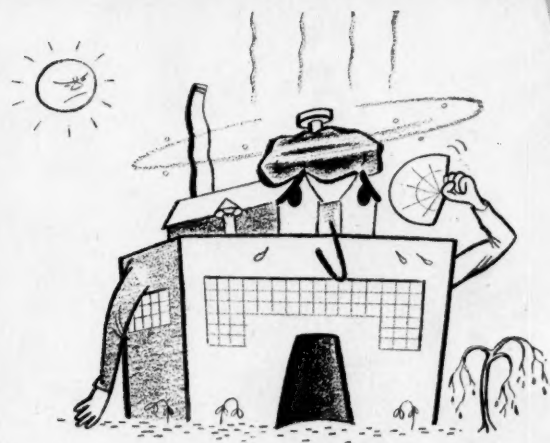
American Oil Chemists' Society, fall meeting, Netherland Hilton Hotel, Cincinnati, Sept. 30-Oct. 2.

Joint Military-Industry Packaging and Materials Handling Symposium; theme: packaging and materials handling in action; Fort Lee, Va., Oct. 1-3.

National Electronics, 13th annual conference, Hotel Sherman, Chicago, Oct. 7-9.

Technical Assn. of the Pulp and Paper Industry, plastics-paper conference, Sheraton-Gibson Hotel, Cincinnati, Oct. 7-9.

IF YOUR PROCESSING CALLS FOR WATER...



OUTSTATE MICHIGAN has the greatest fresh water supply in the world!

NOT ONLY IS OUTSTATE MICHIGAN LOCATED AMID THE GREAT LAKES BUT IT HAS THOUSANDS OF INLAND LAKES AND THOUSANDS OF MILES OF STREAMS.

UNDERGROUND WATER SUPPLIES ARE GOOD, TOO.

Plentiful fresh water is something Outstate Michigan provides *in addition* to the usual advantages offered by other leading industrial areas. If your plant needs water for processing or port facilities for shipping your products anywhere in the world, Outstate Michigan is the place for you.

And don't overlook the opportunities for good living and play in this Water Wonderland. You and your employees can enjoy boating, swimming or fishing within a few minutes' drive of shop or office.

For confidential information on specific industrial sites, talk with our Industrial Development Department.



CONSUMERS POWER COMPANY

An Electric and Natural Gas Utility Company Serving More Than 3,700,000 Michigan People
GENERAL OFFICES • JACKSON, MICHIGAN



The chemical industry *is growing,* but how about chemical distributors?

The continuous rise in chemical stocks on the exchange reflects the fabulous growth of the chemical industry. So does the flood of news about new chemical plants, new chemical discoveries, and increased earnings, which appears in our daily press and in leading magazines.

The fact is that, from a relatively obscure position at the end of World War I, the U. S. chemical industry has expanded three times faster than the rest of industry, and has become a new keystone of the U. S. economy.

But, how about chemical distributors?

Are they the forgotten men? The unsung heroes of a great, new, and growing industry? Or, do they get the credit they so well deserve?

Certainly they have been, and are now, performing a valued service. They warehouse, promote, sell, and deliver products that go to those users who, for the most part, find it advantageous to buy in less-than-carload lots. And they service, bill, and collect.

It's evident that without the services of good chemical distributors, not only Wyandotte but the whole chemical industry would be crippled.

Wyandotte, through its field force, has worked with distributors since its very beginning. We believe we were one of the first in the chemical industry to arrive at a workable distributor policy, write it down, and extend our best efforts to fulfill its terms.

We believe this is in the best interests of our distributors and their customers.

Wyandotte CHEMICALS

MICHIGAN ALKALI DIVISION

WYANDOTTE CHEMICALS CORPORATION, WYANDOTTE, MICHIGAN

Offices in Principal Cities



ENGINEERS AND CONSTRUCTORS FOR INDUSTRY

385 Madison Avenue

New York 17, N. Y.

PITTSBURGH COKE DOUBLES ITS PHTHALIC CAPACITY

Lummus Engineers and Constructs \$3 Million Plant

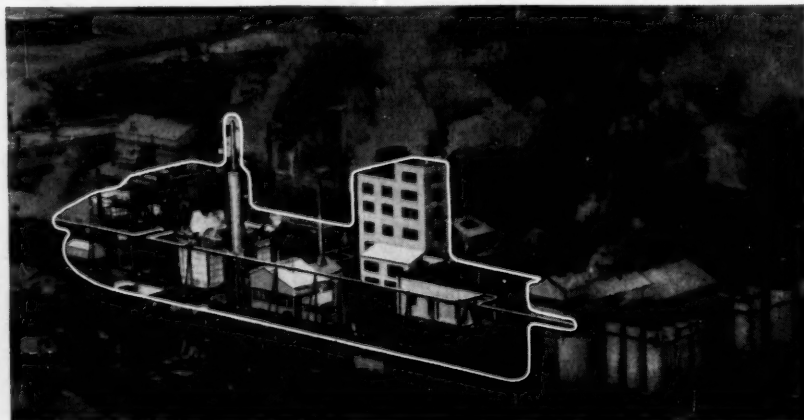
The recent start-up of Pittsburgh Coke & Chemical Co.'s new phthalic anhydride facilities marks another step in this company's expansion in the chemical field. Engineered and built by The Lummus Company, the new plant was integrated with existing facilities of the company's Industrial Chemicals Division on Neville Island in the Ohio River below Pittsburgh.

Since the new plant was an expansion of existing facilities, interference with current production during construction had to be kept to a minimum. This was done by close coordination between Pittsburgh Coke and Lummus engineers at all stages of the job.

The plant has a number of outstanding features. The Lummus-designed instrumentation system includes thermocouples which — at the

push of a button — in the control room — travel to any desired point in the reactor as indicated on the control board. This instrumentation permits convenient checking of temperatures throughout the reactor bed. Molten salt circulated around the reactor maintains the desired temperature of reaction.

Current Lummus projects include plants for the manufacture of ethylene, ethylene oxide, pulp and paper, beryllium metal, ammonia and food products. Every Lummus project reflects the experience of many specialists in the process fields. This experience is ready to work for you — to design, engineer and build new or expanded facilities. If you have such a project in mind, discuss your plans with Lummus.



The Lummus Company, 385 Madison Avenue, New York 17, New York. *Engineering and Sales Offices and Subsidiaries:* New York, Houston, Montreal, London, Paris, The Hague, Bombay. *Sales Offices:* Chicago, Caracas. *Heat Exchanger Plant:* Honesdale, Pa. *Engineering Center:* Newark, N. J.

Outlined in white are the expanded phthalic anhydride facilities engineered and constructed by Lummus for Pittsburgh Coke & Chemical Co.

Business Newsletter

CHEMICAL WEEK

August 3, 1957

Cash dividend payments of chemical firms, \$429.8 million the first half of 1957, were 6% above the comparable period of '56. The figure for chemical firms, from the U.S. Dept. of Commerce's study of corporations issuing public reports, was one of the highest in the "manufacturing" category; corporations in general increased dividend payments about 3.5%. Oil refining, iron and steel industries also posted large gains.

The payout in June alone was 7% over the June '56 mark for the chemical firms. Firms reporting paid out some \$166.9 million this June; \$155.8 last June.

Clorox Chemical stockholders okayed merger plans with Procter & Gamble last week in a special meeting at Oakland, Calif. P&G stockholders are expected to complete the merger plans (*CW*, June 8, p. 81) when they vote this week (Aug. 1). Basis for the combination will be an exchange of stock, 8.5 shares of P&G common for 10 Clorox capital stock shares. According to present plans, Clorox will operate as a wholly owned P&G subsidiary, Clorox Co.

The American Cyanamid-Norwich Pharmacal merger is off, however. "Insurmountable legal problems" forced abandonment of the merger plans. The legal problems are generally felt to be those created by the U.S. Justice Dept.'s recent actions against several merged firms.

The West Coast is getting another ammonia plant. California Ammonia Co. (Oakland, Calif.) plans to start construction this month of a 100-tons/day anhydrous ammonia plant at Lathrop, Calif. The Lathrop plant (about 12 miles south of Stockton) will adjoin the fertilizer manufacturing facilities of Cal-Ammonia's largest stockholder, Best Fertilizers Co.

Best, which has been purchasing ammonia, will use natural gas as its source of hydrogen. It will manage the new firm for 10 years, and will get a major portion of the output, which is to be prorated among Best and some 500 farmer-stockholders according to their investment.

Pollution-free air in a petrochemical center? Baton Rouge, La., one of the Southwest's largest chemical complexes, can just about claim that honor. According to a 12-month study just completed by Kem-Tech laboratories (Baton Rouge) and financed by a dozen local industries, the city is "relatively" free of industrial pollutants, compared with other industrial cities.

The report declared that Baton Rouge's atmosphere does not have industrial pollutants in "such proportions as would present health hazards," although it is above the nation's average in the amount of dust

Business Newsletter

(Continued)

contained. Most of this is "natural" dust, resulting from dry weather and lack of curb and gutter streets in many areas of the city.

•
Possible tax relief for firms forced to sell property under anti-trust rulings—and this might include Du Pont—is contained in a bill that has just been approved by the House Ways & Means Committee. The bill—still far from law—squeaked through the committee, and faces opposition on the House floor from the Treasury Dept. It would exempt firms from paying capital gains taxes on forced sales of property if the proceeds are reinvested within a year in substantially similar property. Conceivably, Du Pont, which may have to divest itself of General Motors stock, could save several million dollars if the taxes were waived.

•
Complaint about the TV ads for Helene Curtis' Enden shampoo has been filed by the Federal Trade Commission. FTC charges Helene Curtis with falsely advertising on TV that Enden cures dandruff.

•
Some late plant expansions:

- Stauffer will build a \$4-million, 400-tons/day sulfuric acid regeneration plant at Hammond, Ind. The plant will process oil refinery sludge acid from the Whiting-Hammond area refineries.

- Stauffer will also expand its sulfur recovery plant at Baytown, Tex. Consolidated Chemical Industries, division of Stauffer, operates the plant, which will double capacity.

- Spencer Chemical will construct a 100-tons/day urea plant at Henderson, Ky. The plant is due in next summer.

•
Virtual end to the cement workers strike came last week with a settlement of differences between the union and Universal Atlas Cement, followed by agreement with Lehigh Cement. Their agreements are the basis for a raft of negotiations on strikes that have idled some 16,000 workers at 65 plants in the U. S. and greatly affected chemical construction throughout the U. S. (*CW*, July 27, p. 44).

Main provisions of the compromise settlement include a 10¢/hour across-the-board wage boost, retroactive to expiration date on old contracts; retention of the "subcontractors" clause of the old contract; broader vacation and overtime pay provisions.

•
Du Pont's new income and sales climbed to record levels in the Jan.-June '57 period. Net sales were \$1,014 million (6% over the '56 mark); operating net income was \$136.5 million (10% over the comparable record in '56); and over-all net income from all sources was \$201 million, up almost 7%.

*Announcing
a New Agricultural
Pesticide*

DELNAV*
(Formerly Hercules 528)

*Trademark



After three years of extensive field tests, Delnav—a new phosphate pesticide—will be commercially available in limited quantities this year.

With indicated effectiveness in controlling a wide range of crop pests, this unusually long-lasting pesticide has already been recommended by various state authorities for use on cotton. Test results have also demonstrated the usefulness of Delnav on citrus and deciduous fruits, grapes, vegetables, and ornamentals as well as control of cattle ticks.

Developed at Hercules' Research Center and Agricultural Chemicals Laboratories, Delnav has been evaluated by Hercules, the United States Department of Agriculture, and various state agricultural research laboratories. Among the insects it controls are leafhoppers, thrips, leaf miners, and mites of various types. The effectiveness of Delnav is shown by the fact that it not only destroys adults but also the eggs of mites.

Delnav will be available in dusts or sprays in the near future. Additional information on this new product can be obtained by writing to Hercules.

HERCULES

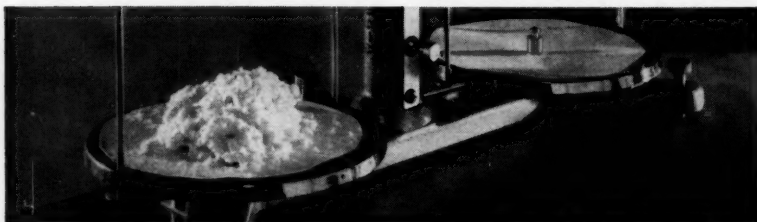
*Agricultural Chemicals Division
Naval Stores Department*

HERCULES POWDER COMPANY

INCORPORATED
900 Market Street, Wilmington 99, Del.

HN57-1R

...AMONG SOME 3600 ORGANICS



With one of the lowest bulk densities among Eastman Organic solids, regard these five grams of **fluff**. Familiarize yourself with the look of N,N-Diethylaminoethylcellulose (Eastman 7392; 25 g. for \$4.60, 100 g. for \$15.90). It looms as the standard anion-exchange packing for chromatographic columns set up to resolve proteins.

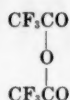
Despite our many years in cellulose chemistry, the idea for DEAE-cellulose seems to have entered the heads of some folks at the National Institutes of Health instead of ours (*J.A.C.S.*, 78, 751). We are not crestfallen, though, for we recognize that our lot is to make and sell Eastman Organic Chemicals and invent only when we can.

A gentleman in Philadelphia named Earl Usdin has been so grateful at being spared the mess of preparing his own DEAE-cellulose that he has shared with us his experience here and in Sweden with a further elaboration of the idea, N,N,N-triethylaminoethylcellulose. This is a quaternary compound, with a charged nitrogen ready to attract anions as soon as the coating of hydroxyls that preserve its electrical neutrality has been removed. With that kind of attractive force in play, the casual bystander would expect to find TEAE-cellulose much more anion-avid than DEAE-cellulose, which depends on the mere general basicity of amine nitrogen. Doctor Usdin, no casual bystander in this area, reports that actually the effective difference between the two is small.

Certain folic acid derivatives that interest him come off the TEAE-cellulose with phosphate developer at pH 6.1, as compared with the rather destructive pH 1 to 2 levels which the older-fashioned, ante-cellulosic ion-exchange resins need to make them let go. He claims

that once you have the DEAE-cellulose it's a breeze to convert to TEAE-cellulose. Just reflux with *Bromoethane* (Eastman 114).

We'll give this some time to sink in. Then, if demand should develop for TEAE-cellulose, we might be moved to offer that too. Meanwhile you are welcome to an abstract of the procedures for chromatography with these **fluffs**.



With the lowest refractive index among Eastman Organic liquids (1.269), regard *Trifluoroacetic Anhydride* (Eastman 7386), a newly available **hydrogenless wonder**. It boils at 40-43 C, some 30 degrees lower than does *Trifluoroacetic Acid* (Eastman 6287). This may seem odd to those brought up in the belief that organic anhydrides boil at higher temperatures than the acids from which they derive. In plain *Acetic Anhydride* (Eastman 4), where intermolecular hydrogen-to-oxygen attractions strive for a liquid condition as long as possible, the BP is 22 degrees higher after dehydration than before, but when the hydrogens are replaced with fluorines, volatility reigns.

Whether or not such oddity assures *Trifluoroacetic Anhydride* of a future, it already has a past and (for all we know) a present. It has been made to serve as a catalyst—more accurately, an unconsumed intermediate—for the synthesis under mild conditions of various esters (including some from solid reactants), long-chain polyesters, aromatic ketones and sulfones, and β -diketones directly from carboxylic acids and acetylene. A British team that has cut a swath in this field has had the faith to go to the expense of patenting some of these find-

ings. Along a different line, there is a U.S. patent that speaks of reacting *Trifluoroacetic Anhydride* with acetaldehyde to yield vinyl trifluoroacetate, which is less flammable and much more stable to heat and water than vinyl acetate and vinyl chloroacetates. Come to think of it, we own that one.

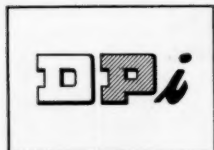
This space was to have been devoted to a certain new reagent for carbonyl determinations. Unfortunately, just as the man was about to start setting type for a paean to its virtues, we found that though its formula can be written with only the symbols C, N, O, and H, the material we had proposed to offer leaves a perceptible ash after ignition. Until we get to the bottom of *that*, the identity of the reagent will remain enshrouded in mystery. Just to keep from changing the subject, we pick another new carbonyl reagent to talk about—*Thiocarbohydrazide* (Eastman 7372), $\text{S}=\text{C}(\text{NHNH}_2)_2$.

Not only does this child of hydrazine and carbon disulfide quantitatively precipitate aldehydes as brilliant yellow or red hydrazones (*Comptes rendus*, 240, 1097), but if applied topically to the cerebral cortex, it will put fast, high-voltage **spikes on your electroencephalogram**, an effect which may or may not be associated with inhibition of diamine oxidase or inhibition of enzyme systems catalyzed by pyridonal phosphate (*Epilepsia* [3], 3, 121).

Thiocarbohydrazide is furthermore a spot-test reagent for microscopic identification of 23 different cations. We can send you a list of them and of the colors by which each is represented. The above *Comptes rendus* paper from which we lift the list also tells how to use the reagent to separate molybdenum from tungsten or uranium in one pass. That procedure, too, you can get in English from us.

Entirely aside from its analytical usefulness, *Thiocarbohydrazide* exhibits some interesting reactions of its own, such as formation of heterocyclic ring systems. One of our more skillful chemists at least *thought* they were interesting. If you think so too maybe we could get him to correspond with you.

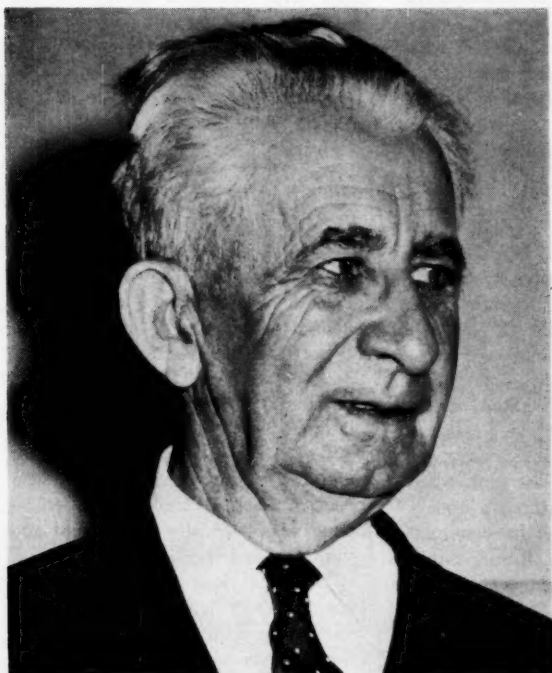
Prices quoted are subject to change without notice.



The world of commerce in organics spins on, possibly nudged a trifle by those who send for the abstracts we mention and look for an organic they need among some 3600 in our Eastman Organic Chemicals List No. 40. Do you have your copy? *Distillation Products Industries*, Eastman Organic Chemicals Department, Rochester 3, N. Y.

Eastman Organic Chemicals
Also...vitamins A and E in bulk...distilled monoglycerides

Distillation Products Industries is a division of **Eastman Kodak Company**



WIDE WORLD PHOTOS

Durham, Strauss: Studying a new bill—what AEC can do to develop atomic power.

Working Up New Steam for Atomic Energy

The Congressional Joint Committee on Atomic Energy, in the process of flexing some new authority, fell into a wrangle last week about public power policy in a \$268-million atomic construction program for this fiscal year.

Wrangle aside, however, the committee will produce the first itemized atomic construction bill ever considered by Congress. For chemical process companies, the measure, now being studied by Rep. Carl Durham's (D., N. C.) full committee, clarifies the role they can play in the development of atomic energy.

Ultimately, of course, and soon, it seems likely, Congress will direct a reluctant Atomic Energy Commission to start on the federal reactor program to produce electric power for civilian consumption. Congress, in assuming direction of the program, has told AEC Commissioner Lewis Strauss—who must have Congressional approval for funds for construction—to build five

reactors for the benefit of public power co-ops, municipal power agencies.

Funds Voted: For initial work on the five reactors, the joint AEC subcommittee authorized about \$130 million. Eventually, the reactors would cost upwards of \$140 million. The projects:

- For the Consumers Public Power District of Nebraska, a sodium-graphite reactor. This would be rated at 75,000 kw. and would likely cost upwards of \$50 million.
- The city of Piqua, O.—a 12,500-kw., organic-moderated reactor.
- Wolverine Electric Co-op of Big Rapids, Mich.—a 10,000-kw., aqueous homogeneous reactor.
- Chugach Electric Assn. of Anchorage, Alaska—a 10,000-kw., natural uranium reactor.
- Rural Cooperative Power Assn. of Elk River, Minn.—a 22,000-kw., boiling-water reactor.

Administration Blow: If the subcommittee bill is approved, it will be

a setback for the Administration, though on the other hand it is still by no means the \$400-million federal program most ardent public power advocates want. The Administration has an out—a presidential veto. But this would jeopardize the entire atomic construction program.

Atomic construction fell into the same class as public works for the first time as a result of a March speech by Clarence Cannon, chairman of the House Appropriations Committee. Heretofore, Congress had given the commission its funds in a lump sum, and AEC had gone its own way in spending them.

Now, AEC finds itself in the same position as the Bureau of Reclamation or the Corps of Engineers in going after money—first, get itemized authorization from one "overseer" committee; second, get the actual appropriation through (1) the Appropriations Committee and (2) Congress itself.

Because of the new process by

which AEC must foster its program, a few details of the bill are being made public:

- AEC plans to spend about \$41-million on its special nuclear materials program, including \$12 million for reduction of fire hazards at two plants and \$3 million for development, design and engineering of a production reactor to produce plutonium for weapons.

- The atomic weapons program will cost about \$35 million, of which \$10 million is earmarked for a new plant facility for production and development of bombs and warheads. Another \$11 million is slated for a high-explosives plant, a weapons special component plant, and a full weapon-size test reactor.

- Bulk of the funds, of course, are intended for reactor development aimed at advancing nuclear arts, primarily in the electric energy field. And much of the money would go for continuation of work on going projects.

But some are new construction projects. One is a 15,000-20,000-kw. water-cooled demonstrator reactor in Puerto Rico to cost \$9 million. Another is a \$40-million prototype reactor—natural uranium, graphite-moderated, gas-cooled—at the Arco, Idaho, National Reactor Testing Station. A third calls for \$15 million to begin work on a reactor that would use plutonium as its primary fuel.

The new reactor at Arco would be designed to produce 40,000 kw.; the plutonium reactor, 15,000 kw. (probably located at Hanford, Wash.). The bill provides for no public sale of the power, but rather for its use by AEC on the site.

The subcommittee lent fresh help to private power groups now struggling to get a solid foothold in the new industry. It approved about \$50 million for private industry assistance—in waivers on fuel use charges, plus direct research and development aid—for two private groups. One is a combine of Florida utilities; the other, a Midwestern combine headed by Northern States Power Co., which seeks to build a reactor near Minneapolis.

AEC had sought authority also to give \$4.2 million of help to the Power Reactor Development Corp. But this has been reduced to \$1.2 million, apparently because of prolonged hearings on the firm's reactor design.

Food-Cancer Furor Rages

The Food & Drug Administration boldly sounded off last week with some sharply worded advice about allegations and innuendoes implicating chemicals in the rising tide of cancer deaths.

FDA's advice: don't become so possessed of a cancer phobia that you lose perspective.

This advice was delivered by Deputy Commissioner John Harvey to a meeting of the American Food Law Institute in London. They marked a new departure for FDA. Previously, the agency has maintained a discreet silence when others—including prominent scientists—have warned of the risks of chemicals used in foods.

Strong Report: That silence was particularly noticeable last year, when a U.S. spokesman delivered a widely publicized report to the International Cancer Conference in Rome, citing a host of suspect chemicals in the food supply (*CW*, Sept. 1, '56, p. 22). That report—by Dr. W. C. Heuper, chief of environmental cancer for the National Cancer Institute at Bethesda, Md.—prompted the Rome group to go on record as favoring the barring from food any chemical not yet proved absolutely clear of suspicion of cancer-inducing ability in test animals.

Explanation: Just what FDA's new stand implies was explained in London last week by Harvey, who read a statement prepared by his boss, FDA Commissioner George Larrick.

"Cancer can be produced in test animals by repeated injection of sugar solution, or peanut oil, or cottonseed oil, or lard, or tannic acid into muscle tissue. Should they be taken out of our food supply?" the paper asked.

The answer: "We think it unwise to become so possessed of a cancer phobia that we lose perspective."

On the other hand, FDA sees "no need to tolerate even any very slight residual risk unless the additive does serve a useful purpose"—and with few exceptions, intentional additives do serve a useful purpose.

Elsewhere: While his statement was being read in London, Larrick remained close to Washington for a scheduled appearance at House hearings on proposed new legislative con-

trols over chemical food additives. When the hearing fell behind schedule, Larrick gave up his time so the congressmen could hear out-of-town opponents of FDA's proposed licensing bill.

Hearing Chairman John Bell Williams (D., Miss.) said that Larrick will be heard later—probably near the Aug. 6-7 dates set aside for a panel discussion before the full Commerce Committee. The panel, a group of 19 scientific experts, has been invited to tell Congress—and the public—of the latest scientific data on additive safety.

Leading the panel—chosen by the National Academy of Sciences—will be the NAS food protection committee chairman, Dr. William E. Darby, who heads Vanderbilt University Medical School's biochemistry department and division of nutrition.

The panel was created partly to provide expert help in technical matters arising from testimony such as that of physician William Smith.

Smith stirred up publicity recently (*CW*, July 27, p. 23) when he charged that industry had squelched food-cancer studies.

Williams says the panel can do the same kind of educational job—putting the issue in perspective—that a similar group did to quiet fears on the safety of Salk vaccine two years ago.

Suspect or Guilty? Larrick's London paper contained at least one comment in rejoinder to recent testimony before the Williams subcommittee by Dr. Francis E. Ray, head of the Cancer Research Laboratory, University of Florida. Under questioning, Ray couldn't point to any carcinogen used today in food, but he noted—in answering a congressman's inquiry on the point—that FDA had stricken from the list some coal-tar colors that, he said, had "become suspect."

Larrick's rejoinder: "We don't know of any evidence that any coal-tar color now permitted in food, or any of the three colors recently removed from the list, is capable of causing cancer when added to man's food supply." The three colors in question were delisted after tests showed they could cause liver damage, other acute—but noncancerous—effects.

Scramble for Carter

One of the hottest over-the-counter items traded last week in Wall Street was the initial public sale of common stock of Carter Products, Inc., a proprietary drug firm now going ethical.

When Carter stock was first offered on Wednesday, underwriters offered it at \$22/share, but first bids were in the neighborhood of \$30. It has since stayed at about that price; and this Monday it opened at \$31½-32. Seldom does the market witness such a dramatic upward valuation of new stock issues.

Rags to Riches: Behind the intense popularity of Carter lies a Horatio-Alger-like development story. Since 1880, when the company was founded, Carter has been best known for its Carter's Little Liver Pills, a combination of vegetable agents sold as a patent medicine.

In 1935, '38 and '50, respectively, the company introduced its three best-know toiletry products: Arrid—a deodorant, Nair—a depilatory, and Rise—an aerosol-packaged shave cream. Toiletries now account for about 30% of the company's consolidated net sales.

The Big One: Then, in 1954, the company came out with its first venture in the ethical field, Miltown—a tranquilizing drug that in '55 fostered 59% of the company's consolidated net sales.

The importance of Miltown, trade-name for meprobamate, sold in tablet and bulk-powder form, is also indicated by the company's own statement that only the meprobamate patent is essential to the continuation of its present business.

Both Rise and the meprobamate combinations are distributed by Carter and, through cross-licensing arrangements, by Wyeth, American Cyanamid and others. Miltown, in the fiscal year ended March 31, '57, accounted for 84% of the company's consolidated net commissions and royalties; toiletry sales, sparked in large measure by Rise, accounted for 16% of consolidated net commissions and royalties.

What Carter intends to do, now that it's headed for widespread public ownership, the company hasn't yet stated. But it appears to be aiming for even stronger acceptance as an ethical drug producer.



For Michigan's Marvin, a new horizon beyond the oil brine fields.

Petrochemical Entry

Michigan Chemical Corp. (St. Louis, Mich.) plans to acquire for cash the petrochemicals division of Swan-Finch Oil Corp. (New York), says Michigan President Ted Marvin. The move will be the former's biggest diversification to date.

Michigan, a maker of brine chemicals, pharmaceutical intermediates, DDT, and rare earth oxides, has already become exclusive distributor of all S-F products. Last week, it bought all of the division's finished goods inventory. Now, pending stockholders' approval within 90 days, the Michigan firm will acquire all the fixed assets and other inventories.

Both companies feel the time is right for such a move. Michigan Chemical has been seriously contemplating getting into the petrochemicals business. While it has turned a nice profit from selling bromine, the market is not considered comparable to petrochemicals. Michigan feels it can use its large research staff to advantage, developing new oil-derived products.

Swan-Finch, recently suffering from financing problems, specializes in lube oils and greases for automotive and agricultural implement industries, also makes a series of bulk and packaged industrial products for the foundry, metalworking and allied industries. The revenue from sale would boost its working capital.

Venture into Chemicals

Provided stockholders o.k. the move, General Dynamics Corp. will soon absorb Liquid Carbonic Corp. as an operating division. General's president, Frank Pace, and Carbonic's president, Rex Nicholson, confirmed last week that talks were under way.

Terms call for the companies to exchange stock on a share-for-share basis. Total assets of the merged firms would be about \$494 million.

If the merger is approved, it will be General Dynamics' first venture into the chemical field, but "it's a logical extension of the corporation's activities," says Pace. Dynamics now builds aircraft, guided missiles and radar equipment, and has launched three nuclear-powered submarines. It also builds the new B-58 Hustler, an Air Force jet bomber.

The merged company would continue Liquid Carbonics' liquid- and compressed-gas production for both captive uses, as jet and missile fuel chemicals, and for sale to industrial consumers.

General, with government contracts making up approximately 85% of its business, showed sales of \$334.6 million for the first quarter of this year, almost double the \$173.4 million it chalked up in the first quarter of '56. Its net income rose proportionately from \$4.3 million in the first quarter of '56 to \$8.8 million in the same period this year. Total assets of the company at the end of '56 were reported at \$434.6 million.

Liquid Carbonics is the world's largest maker of carbon dioxide, stands fourth in oxygen, acetylene and medical gases output. It has 46 U. S. plants, 13 in Canada and 10 in South America.

The company's sales for this year's first quarter totaled \$8.1 million, compared with \$7.4 million in the same period last year. Net income is also up, from \$336,765 in the first quarter of '56 to \$605,844 this year. Its total assets, as of Sept. 30, '56, were \$59.7 million.

As yet, no date has been set for the special stockholders' meetings that must be called by both firms to get approval of the proposed merger. But company officials report that they'll undoubtedly be called before the regular annual meetings—will probably be sometime in September.

El Paso Merger Under U.S. Fire

El Paso Natural Gas Co.'s plans for further developments in the chemical field appear to be in for rough sledding after the government's filing last week of a suit to break up the 1956 El Paso-Pacific Northwest Pipeline merger.

The Justice Dept.'s Antitrust Division is asking the U. S. district court (in Utah) to declare that the merger violates the Clayton Act ban on anti-competitive mergers and acquisitions, and to compel El Paso to shed its 99% control of Northwest. El Paso's acquisition added half again to its gas reserves, also brought it a 49% interest in Phillips Pacific Chemical Co.'s 200-tons/day, \$15-million anhydrous ammonia plant at Kennewick, Wash. (*CW*, Nov. 17, '56, p. 23).

Question Mark: Filing of the case throws a big question mark over future operations of the El Paso-Pacific Northwest system—particularly the system's plans to expand the use of Canadian natural gas to meet growing demands in the Western market. The case is almost certain to drag through the courts for more than a year, perhaps longer.

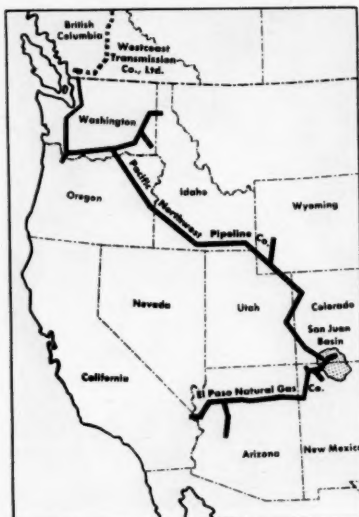
The government move also appears to bolster Pacific Gas & Electric Corp.'s proposal to build its own natural gas pipeline from Canada to the San Francisco area (*CW*, July 27, p. 23).

The antitrust complaint asserts the merger could substantially lessen competition or tend to create a monopoly, and makes these major charges against El Paso:

- It unites the only two major pipelines transporting and selling natural gas in several Western states; consumers of gas in those states could thus be deprived of a competitive market (see map).

El Paso, says the complaint, is the principal supplier in Arizona and Nevada, a large supplier in New Mexico, Texas, and also sells in Utah. Pacific is the sole supplier in Washington, Oregon, Idaho, also sells in Wyoming, Colorado and Utah.

- It unites the only two major purchasers of gas from hundreds of producers in the San Juan Basin and in other gas fields in the Western



El Paso network, including Pacific Pipelines, has access to Canada.

states, depriving producers of a competitive market in selling their products.

- It gives El Paso the only existing domestic facilities for importing Canadian natural gas into the West, and also provides permanent access to Canadian gas sources.

- It increases concentration in the production, purchase, transmission and sale of natural gas in the Western states and strengthens El Paso's competitive position to the point where potential competitors may be permanently excluded.

In answer, Paul Kayser, El Paso president, says that "millions of gas customers would inevitably pay higher costs for their service" if the government should win its case. He points out that the price of gas purchased by El Paso and Pacific Northwest is controlled by the Federal Power Commission and that the rates are strictly regulated.

Moreover, loss of the Pacific Northwest facilities would block an easy route for El Paso into further chemical ventures. In the light of its joint interest in synthetic rubber with General Tire & Rubber, its venture with United Carbon in styrene, and its announced interest in polyvinyl chloride, acrylonitrile, polyethylene and methyl methacrylate, it could be a tough blow to development through Pacific Northwest's subsidiary chemical facilities.

Bayer: Argentine Gains

Farbenfabriken Bayer's efforts to re-establish itself in North and South America seem to be paying off. Last week the Argentine government signed a pact agreeing to return the firm's trademarks seized in World War II.

The pact is an effort to consolidate Argentina's big trade debt to Germany; and under it, Argentina agrees to return all German trademarks and to find a formula for returning the seized plants or part of their value.

Lion's Share: Quimica Bayer S. A., German Bayer's Argentine subsidiary, had the lion's share of the Argentine aspirin market until its plant and trademark were seized by Argentina in 1945. Since then, Quimica Bayer has been run by a government agency. (Trade sources say it has been badly run, by ordinary business standards.)

Now Bayer will get back its trademark, something it's been pressing hard for in the U. S. and the Caribbean area (*CW*, July 27, p. 23), and at least a portion of the value of its investment. Whatever the total recompense, under terms of the agreement Bayer must reinvest it in Argentina. And there's little doubt in the trade that the company, once again in possession of its trademark and with funds to be invested locally, will make a strong bid to regain its former supremacy in Argentina.

Chief Competitors: Chief competitors in the country will be the current two most popular aspirin brands: Geniol, manufactured by Laboratorios Suarri S. A., and Mejoral, made by Sydney Ross S. A., a subsidiary of Sterling Drug. Bayer has maintained third place in the market, with Cafiaspirina, while fourth position is held by Aliviol, manufactured by Villa Aufricht SRL. Merck, Squibb, Lepetit and other pharmaceutical companies make their own brands of aspirin, accounting for the remainder of the market.

Argentina is a great consumer of aspirin. Its 19 million people use some 550 tons/year, or almost a billion tablets. Recent severe price freezes of drug products, along with mounting inflation, have greatly reduced the profit margin on aspirin, as on other drugs. The lower margins are expected to make increased competition from Bayer even harder to swallow.

EXPANSION

Organics: Victor Chemical Co. will build a multi-unit organic chemical plant at Mt. Pleasant, Tenn. Construction will get under way next month with start-up scheduled for the fourth quarter of 1957. Cost has not been revealed.

Nitric Acid: Mississippi Chemical Corp. is planning a 150-tons/day nitric acid plant near Yazoo City, Miss. Contractor is Chemical & Industrial Corp. (Cincinnati).

Vinyl Chloride: Allied Chemical's Solvay Division will more than double the vinyl chloride monomer capacity of its Moundsville, W. Va., plant. New additions will be ready by early '58.

Carbon: Great Lakes Carbon Corp. is reportedly considering the Houston-Port Arthur, Tex., area as a possible site for a \$6-million electrode plant. Robert B. Wittenberg, vice-president of the electrode division, emphasized that plans are indefinite.

Liquid Gases: Air Reduction Sales Co., a division of Air Reduction Co. Inc., has started construction of its \$9-million air separation plant in Acton, Mass. (*CW Business Newsletter*, April 6). When completed in the summer of '58, the new unit will produce 75 tons/day of liquid oxygen, nitrogen and argon. The company will soon complete construction of a similar plant in Los Angeles.

Pharmaceuticals: Upjohn Co. of Canada Ltd., affiliate of the U.S. firm, will build a \$1-million addition to its production facilities in Toronto. The company will then start production in Canada of all currently available company lines, some of which are now imported from Kalamazoo, Mich.

COMPANIES

American Cyanamid Co. has acquired all the assets of MacGregor Instrument Co. (Needham, Mass.) through an exchange of stock. Terms call for MacGregor stockholders to receive 46,460 shares of Cyanamid's \$10-par common stock.

Huron Portland Cement Co. (Alpena and Detroit, Mich.) has completed negotiations to buy Wyandotte Chemical Corp.'s limestone quarry at Alpena. (*CW Business Newsletter*, July 6). Huron will take possession Jan. 1, '58.

The mile-wide quarry is one of the major sources of limestone in the Middle West and has produced more than 70 million tons of limestone. Purchase price has not been disclosed.

Wyandotte will continue to own the fleet of lake vessels used to transport the stone.

Texas Eastern Transmission Co. hopes to acquire La Gloria Oil & Gas Co. through an exchange of stock. Texas Eastern has filed a statement with the Securities & Exchange Commission covering 1 million shares of its common, which it plans to offer to La Gloria stockholders on a share-for-share basis. The offer is contingent upon acceptance by at least 81% of La Gloria shareholders.

If the plan is approved, Texas Eastern will operate La Gloria as a subsidiary, retaining present management and personnel.

Wecco Products Co. (Chicago) has acquired both Columbus Laboratories, Inc. (Chicago), and Ivo Inc. (West Bend Wis.). Operations of both firms will be transferred to a new building in Melrose Park, Ill.

National Cylinder Gas Co. (Chicago) has purchased Medicinal Oxygen Co. (Pittsburgh) in a cash transaction. Price has not been disclosed.

Carwin Co. (North Haven, Conn.) has formed a new wholly owned subsidiary, Carwin Polymer Products Inc., to manufacture and sell solvent-resistant polymers and end-products. If sufficient markets develop, the company plans to add a new building to its North Haven plant to produce the plastic materials.

Air Products Inc. (Allentown, Pa.) has acquired all the assets of Aldan Oxygen Mfg. Co. (Philadelphia). The Philadelphia firm will continue to operate as a wholly owned subsidiary of Air Products.

FOREIGN

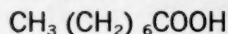
Pharmaceuticals/Argentina: Allied Laboratories (Kansas City, Mo.), through its affiliate, Pitman-Moore Co. (Indianapolis), will invest \$57,319 in Argentina to make vaccines and other biological products. The money will go to Instituto Franco Argentino de Productos Quimicos y Biologicos S. R. L.

In addition, R. P. Scherer Ltd. (Windsor, Ont.) will invest \$184,657 in its Argentine affiliate to make gelatin capsules for the pharmaceutical industry.

Sulfur/Italy: Sicily, until now largely the domain of private enterprise, is the scene of new activity—which will include a number of chemical plants—by ENI, the Italian state oil monopoly. Gulf Oil Co., which had been the sole developer of Sicilian oil resources, should find ENI a hard competitor, offering the Sicilian government more advantageous terms. ENI will build an oil refinery and a number of chemical plants for the utilization of sulfur and potassium salts.

Improve your products with these high purity chemicals

CAPRYLIC ACID



General Mills Aliphath 2, n-octanoic acid

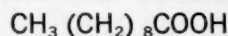
Specifications*

Acid Value	382-391
Saponification Value	382-392
Color-Gardner	1 Max.
Iodine Value	0.5 Max.
Titer°C	13.0-16.0
% Unsaponifiabiles	0.2 Max.

Appx. Composition

Caproic Acid	1%
Caprylic Acid	94%
Capric Acid	5%

CAPRIC ACID



General Mills Aliphath 3, n-decanoic acid

Specifications*

Acid Value	321-329
Saponification Value	321-330
Color-Gardner	1 Max.
Iodine Value	0.5 Max.
Titer°C	26.0-29.0
% Unsaponifiabiles	0.2 Max.

Appx. Composition

Caprylic Acid	3%
Capric Acid	94%
Lauric Acid	3%

Mixed CAPRYLIC-CAPRIC ACIDS

General Mills Aliphath 3B, Mixed Caprylic-Capric Acids

Specifications*

Acid Value	355-365
Saponification Value	355-367
Color-Gardner	1 Max.
Iodine Value	0.5 Max.
Titer°C	6.0 Max.
% Unsaponifiabiles	0.2 Max.

Appx. Composition

Caproic Acid	1%
Caprylic Acid	55%
Capric Acid	40%
Lauric Acid	4%

*Tentative

General Mills, long a leader in fatty acid chemistry, brings you these exceptionally pure Caprylic Acids, Capric Acids and mixed Caprylic-Capric Acids derived from coconut oil. Aliphath 2, 3 and 3B have excellent initial color and color stability, both of major importance to producers of plasticizers, alkyd resins and organic chemicals. These intermediates offer creative chemists new opportunities to improve products—profitably.

Aliphath 2, 3 and 3B are available promptly in 4,000 and 8,000 gallon lined tankcars and 395 lb. net, lined STC.

The same technological know-how in fatty acid chemistry that produced these high-purity products is used to produce other General Mills high quality, uniform fatty acids.

FATTY ACIDS (General Mills Aliphaths)

- Caprylic
- Capric
- Lauric
- Myristic
- Palmitic and Stearic
- Saturated and unsaturated acids from:
 - Coconut
 - Soya
 - Cottonseed
 - Tallow and Mixed Types

All General Mills chemicals are "on tap" when you need them. They can be transported quickly from our modern chemical plant, located at the hub of industrial America to your site, on time—in volume.



Get More Facts!
Send for our
new Caprylic
and Capric
Acid folder.

District offices:
New York, 156 William St. • Chicago, 460 So. N.W. Highway, Park Ridge, Ill.

CHEMICAL DIVISION

KANKAKEE, ILLINOIS

Producers of
Fatty Acids • Methyl Esters of Fatty Acids • Fatty Nitrogens • Versamid Polyamide Resins • Sterols

General Mills

Washington Newsletter

CHEMICAL WEEK
August 3, 1957

The government is calling for a cutback in crude oil imports—an action that is bound to be a key factor in next year's Congressional fight over foreign trade policy.

The Administration wants the oil importers to cut back to about 1 million bbls./day—a 20% reduction. Imports of fuel oil for industrial plants and homes won't be affected.

Consumer-state congressmen fear such a cut will mean higher prices—although it will not be effective until the last quarter of this year. This argument will be used to fight any attempt by U.S. companies in all industries—including chemical—to write more stringent restrictions against imports into the Reciprocal Trade Act, which comes up for renewal next year.

•
It's still touch-and-go whether lead and zinc prices will be stabilized through Congressional approval of a sliding-scale import tax to replace present tariffs. The Administration is trying to keep prices around 16¢/lb. for lead and 13¢ for zinc. The Senate filibuster on civil rights is giving the free-traders more time to maneuver for ways of fighting off the potent bloc that's pushing the Administration-approved proposal.

•
Construction of sewage treatment plants has been boosted across the country—over and above the dollar subsidies being pumped into new plants by the Public Health Service. There had been a fear that cities would hold off their own programs while awaiting word of the federal money they had applied for. Instead, this hasn't happened, and contract awards have been hitting all-time highs.

•
A progress report on the chemistry of free radicals will get full attention at a symposium set for Sept. 18-20 at the National Bureau of Standards. The meeting will be devoted mainly to review of current research on properties of systems containing trapped atoms and radicals.

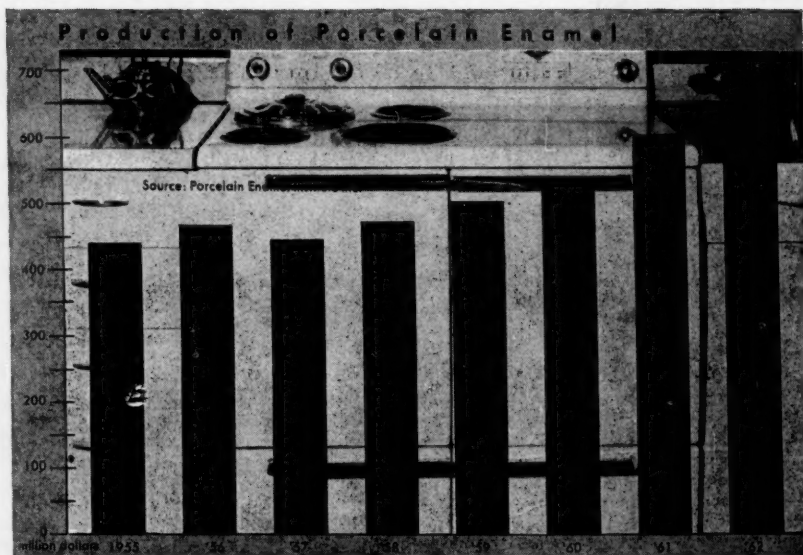
•
Headed toward a Supreme Court test: Food & Drug Administration's *per se* doctrine on harmful coal-tar colors for food. FDA has long held that the law requires it to bar a color if tests show it to be harmful to health, regardless of the amount actually used on food.

That theory survived one Court of Appeals test. But, the Fifth Circuit Court of Appeals—ruling 2 to 1—recently upset this doctrine by upholding the contention of orange growers that FDA may set tolerances allowing use of the coal-tar dye Red 32 to safe amounts. FDA doesn't like the *per se* doctrine, anyway, and has been talking with dye makers about joint sponsorship of legislation allowing it to set safe use limits.

Charting Business

CHEMICAL WEEK

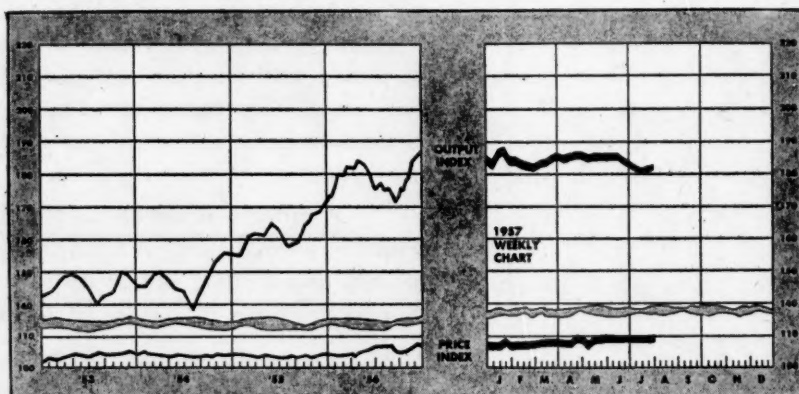
August 3, 1957



Appliances Boost Enamel Sales

Sales of porcelain enamel—voracious consumer of fluxes, opacifiers, floating agents and electrolytes—is expected to hit a record high of \$680 million by 1962. Sales in '57 will total about \$440 million, some \$20 million less than in '56 due to

a slump in sales of ranges and ironers. About two-thirds of enamel produced is used for appliances. Plumbing fixtures, industrial equipment, signs, general enameling and architectural use also take a good share.



Business Indicators

WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	180.5	180.0	174.5
Chemical Week wholesale price index (1947=100)	110.5	110.4	105.6
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	46.82	46.70	49.94

MONTHLY

Production (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All manufacturing and mining	143	143	141
All chemical products	182	184	173
Industrial chemicals	203	205	192

FUNGI AND BACTERIA STOPPED DEAD WITH CSC TRIS-NITRO

**Ideal in Cutting Oils, Oil
Well Flooding, Pipe Lines
and Drilling Muds**

Tris-Nitro—Tris (hydroxymethyl) nitromethane—checks unwanted microbiological growth in aqueous systems. Long known as a hardening agent for proteins under slightly alkaline conditions, Tris-Nitro is a powerful inhibitor of microorganisms as well.

SLOW RELEASE OF FORMALDEHYDE APPARENT SECRET OF SUCCESS

The inhibition mechanism of Tris-Nitro is apparently due to the gradual release of formaldehyde which offers sustained protection for a prolonged period. Recent experiments show that formaldehyde is also slowly released at high humidities and high ambient temperatures in the presence of a trace of alkaline material. Tris-Nitro may also be useful in its dry form to protect packaged goods from mold attack during shipment and storage.

TRIS NITRO'S PROPERTIES ARE WORTH LOOKING OVER

Formula	$(\text{CH}_3\text{OH})_3\text{CNO}_2$
Molecular Weight	151.12
Melting Point, °C	165-170 d
pH of 0.1M Aqueous Solution	5.6
Solubility in Water, g/100 ml at 20°C	220

CUTTING OIL SYSTEM FULLY PROTECTED WITH JUST 0.1% TRIS-NITRO!

GET SAMPLE AND FURTHER INFORMATION. TO HAVE A REPRESENTATIVE DISCUSS APPLICATIONS WITH YOU, WRITE CSC TODAY.

More than 200 compounds were tested in open cutting oil systems. Only 0.1% Tris-Nitro kept system free of bacterial contamination for over 60 days — longer than any other compound tested!

COMMERCIAL SOLVENTS CORPORATION
INDUSTRIAL CHEMICALS DEPT.
260 MADISON AVENUE, NEW YORK 16, N. Y.

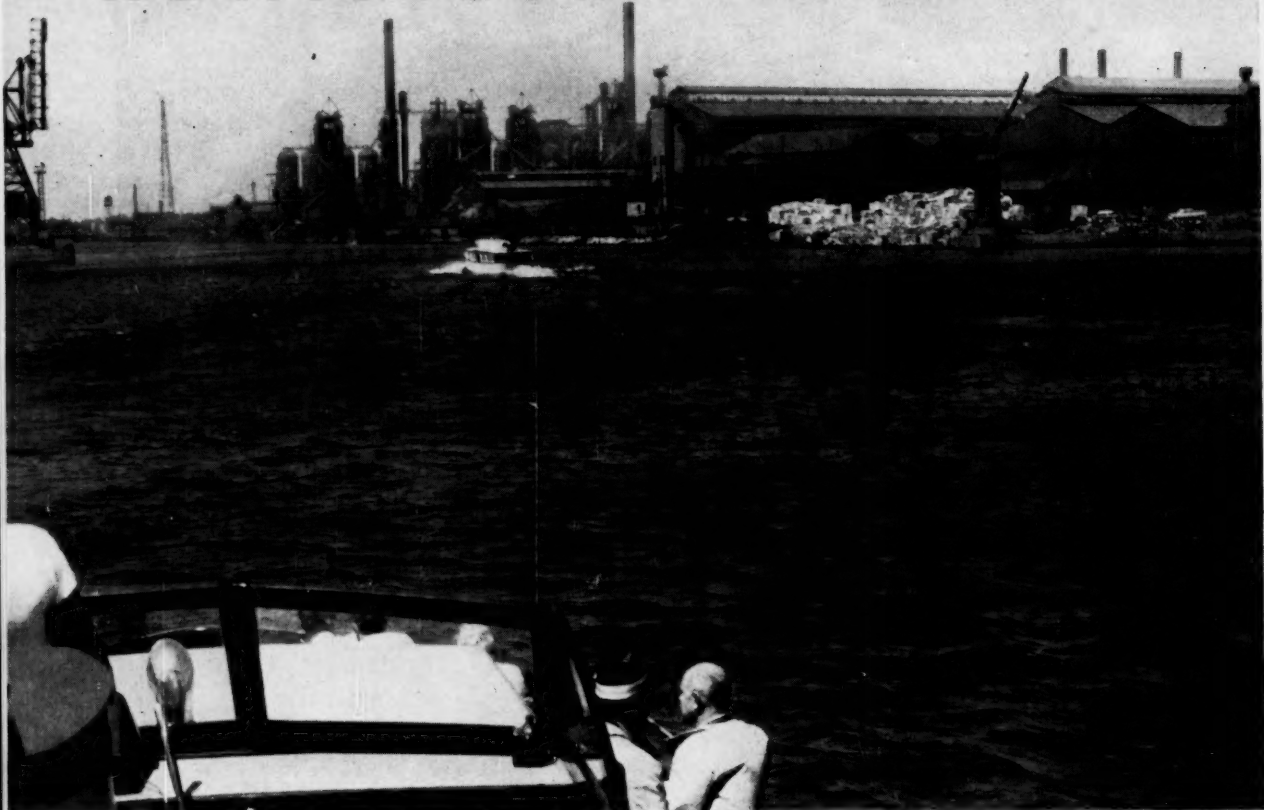
Boston...Chicago...Cincinnati
Cleveland...Detroit
Houston...Indianapolis
Kansas City...Los Angeles
IN CANADA: Reliance
Chemicals, Ltd., Montreal.



Louisville...Memphis
Milwaukee...New Orleans
New York...Pittsburgh
St. Louis...San Francisco
IN MEXICO: Consolmex,
S. A., Mexico 11, D. F.

DISCOVER THE NITROPARAFFINS

ADMINISTRATION



CHICAGO CRUISE: Heading into Calumet River (point A on map, p. 33) executives see signs of . . .

New Buildup on Windy City's Waterways

Chemical process companies this week are scrambling to bolster their ability to utilize the Great Lakes ports on completion of the St. Lawrence Seaway project in 1959.

Construction and expansion of such companies' plants and warehouses at the Midwest metropolis was clearly evident to industrial executives on a summer day's Chicago-area cruise sponsored by Chicago District Waterways Assn.

A camera-equipped *CW* editor — one of the more than 170 business and industry passengers on that all-day cruise—brought back the following observations on the area's newly enhanced importance in process management's planning:

- Eighteen major construction or expansion projects along the Chicago area waterways by chemical process companies are under way now or have been completed within the past 12 months.

- An estimated 40 additional chemical process plants* will be needed in Chicago and vicinity by 1967 to handle rising shipments of raw materials—taconite from Minnesota; iron ore, ilmenite and manganese from Labrador; lead and zinc ores from New Brunswick; copper ore from Quebec; limestone from Michigan; fluorspar and coal from Illinois; naphthalene and certain other petrochemicals from the Midwest, Southwest and Europe; sugar from Louisiana and the West Indies; and phosphate and potash from Southern and Western states.

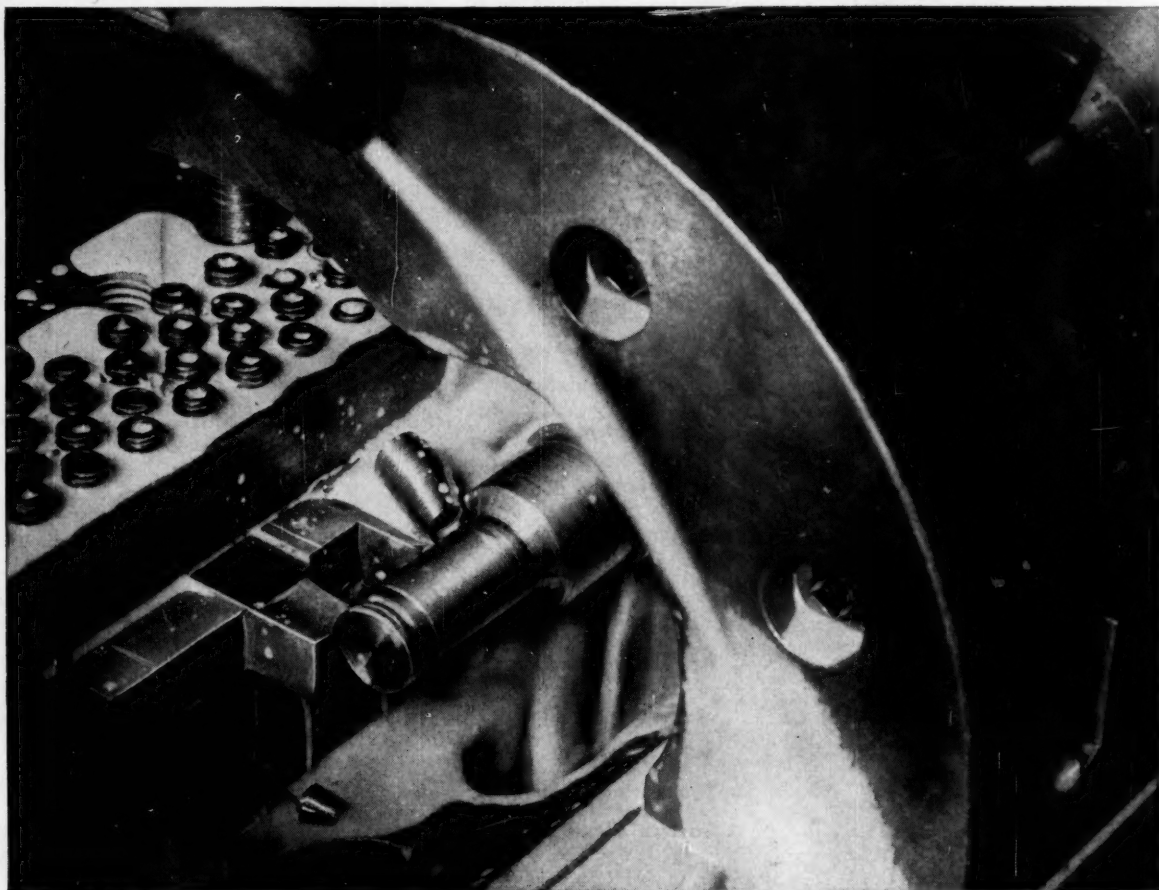
- Illinois is already the top state in export of manufactured goods to Canada; and widening of the Calumet-Sag Channel (upper right photo, p. 34) will make a full-fledged water high-

*Ten plants to make industrial gases, two or three for plating chemicals, five for phenol, five for phthalic anhydride, four for benzene, two for naphthalene, four for toluene, three for cresols, several more plants for aerosol propellants, and various smelters and refineries.

way out of what is now an inadequate feeder route. Thus, Chicago is in an improving position to serve two large and growing industrial and agricultural markets, Canada and the Midwest; and industrialists are figuring that sound economy will call for shipping raw materials (at low freight rates) to processing areas (such as Chicago) that are oriented to big markets.

Holding Edge in Steel: A rundown of chemical projects in the Chicago area indicates that this community will hold its ranking as the nation's No. 1 steel center. Seven steel companies in the area currently are expanding their production capacity by more than 4 million tons/year, and numerous chemical projects are involved: Some of the steel companies are putting in their own oxygen units; coking plants are being expanded, with accompanying rise in capacity for by-product chemicals; and there have been at least two recent expansions by

CARBIDE'S Ethanolamines



put dependability in "SOLUBLE" oils...

Take the case of "soluble" cutting oils! CARBIDE's mono- or triethanolamine produce oils that are low in odor, low in corrosive characteristics—and emulsify in water with the simplest stirring. Results? Stable and uniform emulsions. Also, mono- or triethanolamine yield emulsions of such high dispersion and uniformity, that you need use only low concentrations of the oil to get good lubrication.

This is only one of many types of profitable "soluble" oils stemming from

CARBIDE's ethanolamines, isopropanolamine, or morpholine. You'll want the whole story on these useful products. You can get it in **EMULSIONS AND DETERGENTS**—a 92 page booklet crammed full of technical data and starting formulations on "soluble" oils—and oil and solvent emulsions, wax emulsions, oil and wax polishes, cosmetics, and detergents. For a copy of **EMULSIONS AND DETERGENTS** fill out and send in the coupon.

"Union Carbide" is a registered trade-mark of UCC.

Union Carbide Chemicals Company, Room 328A, 30 East 42nd Street, New York 17, New York.
SEND ME A COPY OF THE 92 PAGE BOOKLET—EMULSIONS AND DETERGENTS

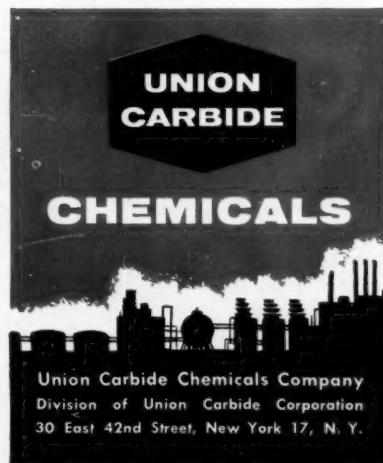
Name _____

Company _____

Street _____

City _____

State _____



*In Canada: Carbide Chemicals Company,
Division of Union Carbide Canada Limited,
Montreal.*

Chemical Producers on Chicago Waterways(Principal chemical process plants
located on Chicago District Waterways)

No.	Company Name	Principal Products
1	Linde Co., division of Union Carbide Corp.	Industrial gases
2	Great Lakes Carbon Co.	Carbon, coke
3	Glidden Co.	Pigments
4	General Chemical Division, Allied Chemical & Dye Corp.	Acids, heavy chemicals
5	Catalin Corp. of America	Urea-formaldehyde resins
6	Spencer Chemical Co.	Formaldehyde
7	Chromium Mining & Smelting Co.	Ferroalloys
8	Clark Refining Co.	Petroleum products
9	Martin Oil Service, Inc.	Petroleum products
10	The Texas Co.	Petroleum products
11	Pure Oil Co.	Petroleum products
12	Alexander Chemical Co.	Sodium hypochlorite
13	Grand Salt Co.	Salt
14	Armour & Co.	Specialty chemicals
15	Pure Carbonic Co., division of Air Reduction Co.	Carbon dioxide
16	International Salt Co.	Salt
17	Penn-Dixie Cement Corp.	Cement
18	Morton Salt Co.	Salt

producers of industrial gases—National Cylinder Gas and Air Reduction, both near Lake Calumet.

Union Carbide and Olin Mathieson have each acquired property on the Cal-Sag Channel for warehouses. American Cyanamid completed a sulfuric acid plant last year at Joliet, and Spencer Chemical on the Little Calumet River early this year brought in a 25% increase in formaldehyde capacity. Stepan Chemical has built several million-dollars-and-up plants near Joliet during 1956 and '57.

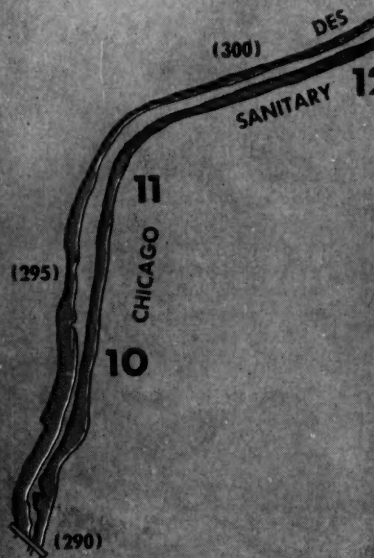
Especially active are some of the leading oil companies and their petrochemical affiliates. Standard Oil of Indiana has added new units and ex-

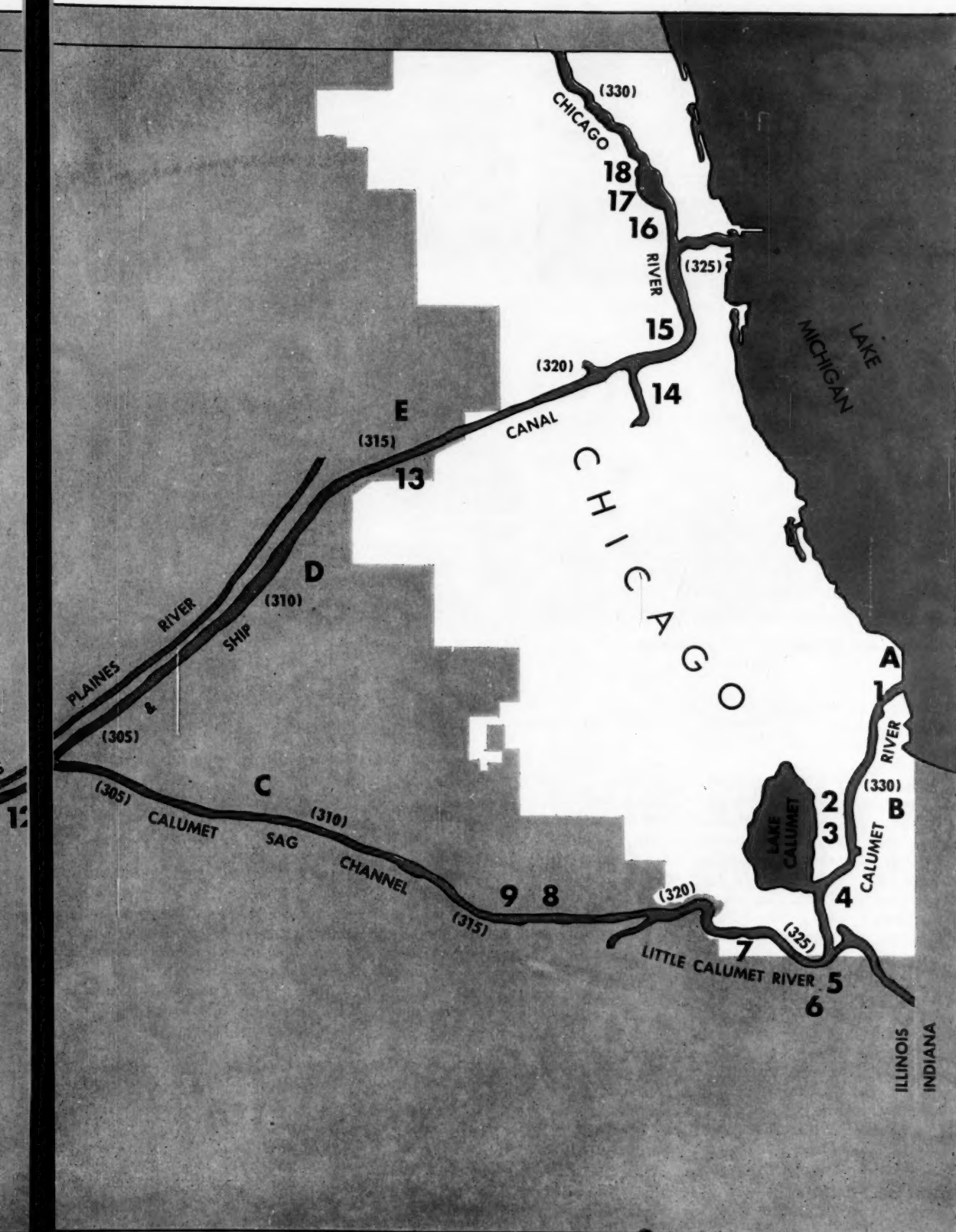
panded old ones at Whiting, Ind.; e.g., a xylene plant and a dewaxing plant. Cities Service is expanding its refinery on the Cal-Sag, and late last year Sinclair Refining completed a \$1.3-million refinery expansion. The Texas Co. is building a \$12-million ammonia plant near Lockport, Ill.; capacity will be 180 tons/day and completion will be late this year. Calumet Nitrogen—jointly owned by Standard of Indiana and Sinclair—brought its 300-ton/day ammonia plant onstream late in '56.

172 Site Scouts: Besides viewing those new and expanding plants and the 150 other large industrial factories, warehouses and terminals along the 75 miles of navigable waterways in the

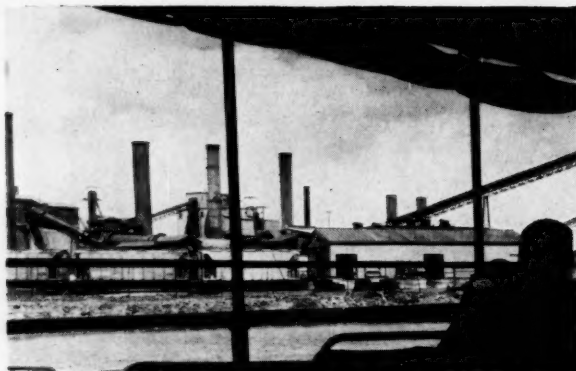
CHICAGO DISTRICT WATERWAYS

(Figures in parentheses show number of miles from Illinois River's juncture with Mississippi River, about 40 miles from St. Louis)

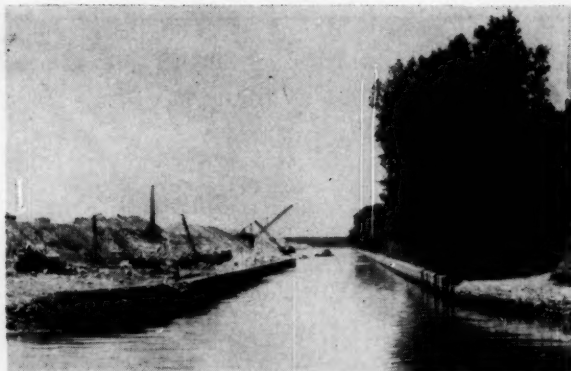




ADMINISTRATION



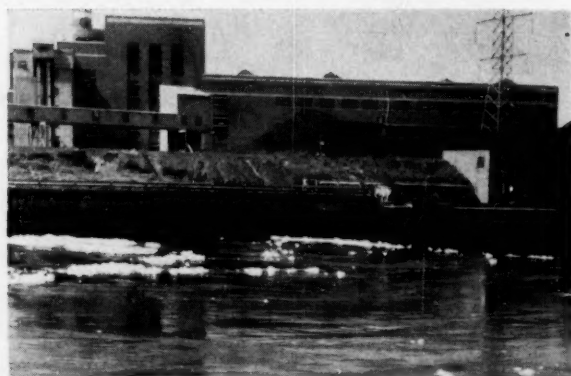
On Calumet River (B), Great Lakes Carbon.



Digging and Blasting to widen Cal-Sag. (C).



On Ship Canal (D), GATX tank terminal.



At Sewage Plant (E), froth from detergent.

area, members of the expedition were sizing up the vacant tracts along the channels as possible sites for their own companies.

Among these 172 potential site scouts were representatives of 14 companies with important chemical process interests: Alexander Chemical Corp. (Chicago), Ansul Chemical Co. (Marinette, Wis.), Cities Service Oil Co. (Bartlesville, Okla.), Continental Oil Co. (Ponca, Okla.), Inland Steel Co. (Chicago), Olin Mathieson Chemical Corp. (New York), Shell Oil Co. (New York), Sinclair Refining Co. (New York), Socony Mobil Oil Co. (New York), Standard Oil Co. of Indiana (Chicago), Stauffer Chemical Co. (New York), Union Carbide Corp. (New York), United States Steel Corp. (Pittsburgh), and Wyandotte Chemicals Corp. (Wyandotte, Mich.)

The group embarked at a boat landing on the Chicago River in three excursion boats: *Wendella*, *Shoreline* and *Mercury*. The little flotilla pulled away from the downtown business district, moved out into Lake Michigan,

and then cruised southward along the Chicago lake front. The boats then swung around the 89th St. breakwater and nosed into the factory-lined Calumet River, passed Lake Calumet Harbor with all hands consuming their box lunches, and wound through the Little Calumet River to the Calumet-Sag Channel. Upon reaching the Chicago Sanitary & Ship Canal, the boats turned northeast and headed back to the Chicago River.

Shipping and Transshipping: One of the lessons learned by the waterways association's members and guests on the triangular cruise was that the port of Chicago is already busy with ocean shipping. The sight-seeing boats encountered two foreign-flag freighters able to traverse the existing St. Lawrence channel, one vessel of the Fjell-Oranje Lines and one of the Swedish-Chicago Line, as well as a number of U.S.-flag seagoing ships loading and unloading cargo at various Chicago piers.

Another observation: manufacturing companies are attaching more and

more importance to warehousing and storage facilities at inland waterways ports. In addition to the Union Carbide and Olin Mathieson sites for warehouses, passengers on the waterways cruise saw numerous existing facilities of this nature, such as Tennessee Products & Chemical Corp.'s combination dock, warehouse and storage yard on the south branch of the Chicago River and the extensive tank storage layout at Lake River Terminals Inc. — a pioneer in this phase of distribution of chemical products.

Is there a pattern in the current upsurge of industrial development at Chicago? One authority holds that such is indeed the case, and that certain process industries will be particularly prominent in the pattern now evolving. Says seaway enthusiast N. R. Danielian, president of the Great Lakes-St. Lawrence Assn.: "The main effect of the seaway will be on industries producing primarily for domestic markets — [among them] chemicals, fertilizers and metals."

TOMORROW'S PRODUCTS TODAY... THROUGH ENJAY PETROCHEMICALS



Basic raw materials for VINYLs that are mildew-proof — color-fast!

Housewives prefer easy-to-clean *vinyl* shower curtains. They're mildew-proof and retain their sparkling color. The quality of these popular vinyl products depends on the quality of the plasticizers used in their manufacture.

Enjay's high standards of purity and uniformity are known throughout the chemical industry. That's why more and more manufacturers insist on Enjay Isooctyl and Decyl Alcohols in making high-quality plasticizers for high-quality products.

The recently expanded Enjay Laboratories are fully equipped to assist you in the application of Enjay petrochemicals to your product. Just call or write us for more information.

Enjay offers a widely diversified line of petrochemicals for industry:

ALCOHOLS & SOLVENTS: Lower Alcohols, Oxo Alcohols, Ketones and Solvents; **OIL & FUEL IMPROVERS:** Detergent-Inhibitors, V-I Improvers, Oxidation-Inhibitors; **CHEMICAL RAW MATERIALS:** Olefins, Diolefins, Aromatics; **ENJAY BUTYL RUBBER & VISTANEX.**



*Pioneer in
Petrochemicals*

ENJAY COMPANY, INC., 15 W. 51st STREET, NEW YORK 19, N. Y. Akron, Boston, Chicago, Detroit, Los Angeles, New Orleans, Tulsa

Have to
MATCH COLORS
Exactly?



DEPEND ON
FISHER
DAVIS-BRUNING

COLORIMETER

THE COLOR MEMORY FOR INDUSTRY



Have to get a color exactly? And keep it once you have it? Fisher Scientific's development engineers have found the answers in the Davis-Bruning Colorimeter. It translates any color, in any product, into a permanent numerical formula that can be converted back into the original color whenever an exact re-match is wanted. The Colorimeter has broad applications in paint, food, textile, paper, plastics, printing, ceramics and other fields requiring exact color control.

Stops Color Drifting

Standardizes by Formula

Eliminates Long Calculations

Measures Color Differences

Tests Color Blindness



B-36a

129 FISHER BLDG., PITTSBURGH 19, PA.



FISHER
SCIENTIFIC

IN THE U.S.A. Chicago Philadelphia IN CANADA
Boston Cleveland Pittsburgh Edmonton
Buffalo Detroit St. Louis Montreal
Charleston, W.Va. New York Washington Toronto

America's Largest Manufacturer-Distributor of
Laboratory Appliances & Reagent Chemicals

ADMINISTRATION

LEGAL

Executive Liability: The policy of criminal prosecution of executives whose plants are believed to have polluted Texas streams has been dealt a sharp setback in highly industrialized Harris County—site of the Houston Ship Channel (*CW*, June 8, p. 46).

Reversing its recent ruling, the Court of Criminal Appeals (Houston) threw out a lower court's oil-pollution conviction of H. W. McCollum, vice-president and general manager of Hess Terminal on the ship channel, accused of allowing oil from the terminal to pollute the channel.

Appellate Judge Lloyd Davidson noted "the absence of testimony" to establish that McCollum was actually in charge of equipment installed to prevent oil escaping into the channel.

The decision—though it doesn't preclude state action against the terminal—vitiates all pollution cases filed against chief executives of offending companies.

Blue Cheer Battle: Procter & Gamble, its subsidiaries and its advertising agency, Young & Rubicam, have lost the first round in their defensive battle with Mrs. Constantine N. Galanis over the property rights to the P & G detergent Blue Cheer (*CW*, Aug. 6, '55, p. 22).

Last fortnight, Federal Judge Archie Dawson in U.S. district court (New York) denied the defendants' motion for summary judgment. Judge Dawson questioned Mrs. Galanis' ability to sustain her claims, but said some questions of fact demand a jury trial.

Mrs. Galanis charges that in Blue Cheer, P & G used an unsolicited idea she sent the firm in 1952. The firm rejected the idea, saying it already had a similar idea under consideration.

Shale Lands Suit: Thirteen Virginians have filed suit in U.S. district court (Denver, Colo.), challenging Union Oil of California's claim to 1,920 acres of oil-shale land in Garfield County, Colorado. The plaintiffs say the land was filed in their interest in 1919. The suit alleges Union Oil is unlawfully in possession of the claim, because the sites weren't open for exploration when the firm published its land-patent application last April 12.



AS&R'S BROWNELL: More than 10% of his employees are old-timers.

LABOR

Old-Timers No Rarity: One yardstick by which to rate your company's labor turnover experiences: the high proportion of long-time employees of American Smelting & Refining Co. (New York). More than 10% of the firm's 30,000 active employees have been with the company 25 years or more. An additional 1,295 quarter-century veterans are on pension or otherwise separated from active service. Board Chairman K. C. Brownell—himself a 30-year AS&R man—notes that one worker now has 51 years of continuous employment with the firm and that 105 employees have been on the payroll 40 years or more.

SUB in Canada: A modified version of the guaranteed annual wage is being introduced in the rubber industry in Ontario. At Whitby and Kitchener, respectively, Dunlop Rubber and B. F. Goodrich Canada, Ltd., have approved supplementary unemployment benefits (SUB) plans in new collective-bargaining contracts. Like similar agreements between rubber firms and United Rubber Workers in the U.S., these plans require the employer to contribute 3¢/man-hour worked into fund from which weekly payments—based on take-home pay—can be distributed to eligible employees who are laid off. Chemical and other industrial unions in the province will now be under pressure to give benefits of this kind.

Goodrich-Gulf Chemicals, Inc.

Ameripol...

OIL-EXTENDED POLYMERS

Types	Physical Properties*
1703	Tensile 3240 psi.
	Elongation 650 %
	Modulus @ 300% Elongation 990 psi.
	Mooney Viscosity— ML212°F. @ 4 minutes
	Raw Polymer 59
1705	Compounded Stock 56
	Tensile 3800 psi.
	Elongation 690 %
	Modulus @ 300% Elongation 860 psi.
	Mooney Viscosity— ML212°F. @ 4 minutes
1707	Raw Polymer 60
	Compounded Stock 57
	Tensile 3170 psi.
	Elongation 760 %
	Modulus @ 300% Elongation 630 psi.
1708	Mooney Viscosity— ML212°F. @ 4 minutes
	Raw Polymer 55
	Compounded Stock 48
	Tensile 3280 psi.
	Elongation 610 %
1710	Modulus @ 300% Elongation 950 psi.
	Mooney Viscosity— ML212°F. @ 4 minutes
	Raw Polymer 61
	Compounded Stock 55
	Tensile 3310 psi.
1712	Elongation 720 %
	Modulus @ 300% Elongation 670 psi.
	Mooney Viscosity— ML212°F. @ 4 minutes
	Raw Polymer 55
	Compounded Stock 51

*Typical average production values. Cure 50' @ 292°F.

Selection Guide

An improved, lighter colored rubber, relatively non-discoloring and non-staining. Used for white and pastel colored mechanical goods, floor tile, toys, sheeting, etc.

General purpose pastel rubber used where color is not important . . . in tires, molded and extruded products.

A non-staining polymer. Used for extrusions, molded products, shoe soles and heels, etc.

Non-staining polymer with relatively low water absorption, improved electrical properties. Used for electrical insulation, athletic goods, coated fabrics, moldings and extrusions.

Similar to 1705, with higher oil content. Used for tires, molded and extruded products.

Used for insulation, tires, molded and extruded goods.

Oil-extended man-made rubber provides balance of properties and economy

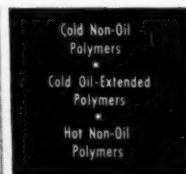
Ameripol is the preferred butadiene-styrene rubber—superior or equal to natural rubber in aging, resistance to wear, weathering, water, oil, permeability to gases.

The cold oil-extended Ameripol grades cost about 20 to 25% less than other grades, yet offer many of the same desirable physical properties. The addition of oil to latex of this type results in an easier processing polymer at lower cost.



Write for free copy

of 24-page booklet "Ameripol—the preferred rubber". Complete technical data helps you select and specify.



Goodrich-Gulf Chemicals, Inc.

3121 Euclid Avenue • Cleveland 15, Ohio



PICK-UP PACK... ONE-TON SIZE



CORRUGATED AND SOLID FIBRE BOXES
FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES
KRAFT BAGS AND SACKS

AVAILABLE FOR SHOWING, WITHOUT COST—NEW FIFTEEN MINUTE SOUND SLIDE
FILM ON THE ECONOMIES OF USING CORRUGATED BOXES FOR BULK SHIPMENTS.

GAYLORD CONTAINER CORPORATION ★ ST. LOUIS

Each of these Drumpak corrugated containers holds 2000 lbs. of bulk granular chemicals. This same amount was formerly packed in 20 hundred-pound units. By consolidating his product in Drumpaks, this manufacturer reduced handling manhours by 80%. The Drumpak is easy to pick up, warehouse and load into freight cars.

Drumpaks are another Gaylord development. To learn how you can cut costs with any type of corrugated or solid fibre container, contact your nearby Gaylord office.

ADMINISTRATION

IDEAS

Short Safety Talks: National Safety Council (Chicago) has released the seventh book in its "Five-Minute Safety Talks for Foremen" series. The series is designed to aid supervisors in conducting safety meetings.

The latest book contains 52 five-minute talks on various aspects of industrial safety, including eye protection, lung protection and hot-weather hints.

AMA Supervisors Course: Beginning Sept. 9 in New York, American Management Assn. will offer its first course for supervisors.

Objectives: to train supervisors in the principles and practices of management and to develop their understanding of and skill in organization, training, communication, human relations, operations and management controls. The course will be given in three one-week units.

KEY CHANGES

Nelson M. Gampfer, to board chairman, and **Frank N. Getman**, to president and general manager, Wm. S. Merrell Co. (Cincinnati); and **Richard D. Waters**, to president and general manager, Hess & Clark (Ashland, O.); both subsidiaries of Vick Chemical Co. (New York).

Matthew J. Betley, to president, Titeflex, Inc., subsidiary of Atlas Corp. (New York).

L. C. Kemp, Jr., to vice-president in charge of Petrochemical Dept., The Texas Co.

Neal M. Draper, to assistant to the executive vice-president, National Aniline Division, Allied Chemical & Dye Corp.

Gordon P. Hungerford, vice-president, Kordite Co., division of Textron, Inc. (Macedon, N. Y.).

R. E. Roberts, to executive vice-president, Pyrofax Gas Corp., subsidiary of Union Carbide Corp.

W. E. Hanford, to assistant to the president for research, Olin Mathieson Chemical Corp.

Ian K. MacGregor, to vice-president for Eastern operations, Climax Molybdenum Co.



The answer may be in the bag

(Dow tech service serves as a short cut in solving glycol problems)

"Time is money," the saying goes. And where time is to be saved in solving glycol application problems, you're likely to find a Dow tech service man armed with facts.

His experience on the use of ethylene, diethylene, triethylene, and tetraethylene glycols often shows the short route to the answer. Yet his is a divided responsibility that works for your good. When our technicians are not in the field

giving on-the-spot help, they're back in our lab comparing, computing, analyzing and testing with up-to-date equipment.

Certainly you have the know-how to find the answers yourself. But with Dow tech service on your side, trial and error are minimized. You often find the solution as near as one of our representative's carrying case! THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. GD 812A.

YOU CAN DEPEND ON

DOW

Canada Scans Red China Trade

Expanded Canadian trade with Red China is receiving more-than-serious consideration.

Canadian chemical industry is supporting the move for liberalized trade with the Communists. Less-restrictive regulations would open markets for hundreds of chemicals, notably fertilizers, petrochemicals. Western Canadian producers would benefit markedly.

U. S. manufacturers would likely obtain a share of the business by means of Canadian affiliates or subsidiaries.

Obstacles must be hurdled, however, before large-scale business can develop. Many materials now classified as strategic will first have to be freed from trade restrictions.

Increased trade will hinge on the position taken by Canada's new Conservative government. If it leans toward London, as many expect, look for stepped-up Canadian chemical trade with Red China.

Will Canada Take the Jump?

Canada may be the next nation to loosen trade restrictions with Communist China, following the example set in recent weeks by most major European nations and by Japan. Such a move would greatly increase Canadian chemical exports and might allow U.S. companies to penetrate China markets through Canadian subsidiaries and affiliates. Moreover, freer trade between Canada and Red China would add to the mounting pressure being exerted on Washington to liberalize the present total embargo on China exports.

What are the prospects for expanded Canadian trade with Red China? Very good, indeed. That's the answer top-level industry and government officials gave *CW* last week. It's no secret in Ottawa that

Canada does not like the rift between Washington and London on China. The Dominion's new Conservative government will probably shift toward the London viewpoint, possibly in a matter of months. And Canadian industry, chemical included, is supporting trade liberalization. Industry and government circles are convinced that both Canada and China would benefit.

How Much? Estimates of the potential Red China market for Canadian chemicals are hard to come by. Last year, the Dominion exported \$2.4 million worth of chemicals (mainly fertilizers) to mainland China. That figure, say some market observers, could be greatly increased. Communist China beckons as a particularly good outlet for pharmaceut-

icals, fertilizers and the many chemicals slated to emerge from Canada's fast-developing petrochemical industry. Western producers, especially, stand to gain.

Optimism over the size of the Chinese market finds support in a new report from Hong Kong by Canada's Trade Commissioner, C. M. Forsyth-Smith. He says that "the scope for Canadian goods would be greatly increased" by trade with Red China. Backing his contention are some solid reasons.

Veering Pattern: In recent years, China has made significant industrial and agricultural progress—perhaps, say returning travelers, as much in the past six years as in the previous 50. Many production targets of the present five-year plan will be reached ahead of schedule. As a result, the pattern of Chinese imports is veering from consumer goods to raw materials, fertilizers, insecticides and heavy capital goods.

So large are the requirements that government authorities have virtually banned the import of consumer items and foodstuffs to conserve foreign exchange for essentials that will strengthen the economy.

Before the Communists seized control, China was a major export market for Canada. Now, with other nations letting down trade barriers, Canadian traders want to re-enter the competitive sales race. Currently, a Chinese technical mission in England is studying plastic materials and production facilities.

Backdoor? Should Canada open the door to Red China trade, U.S. companies might gain a foothold in the new market. Canadian subsidiaries would be the means. But how free such firms would be to export to China still isn't entirely clear. Chemicals produced by Canadian subsidiaries from non-U.S. raw materials probably could be exported freely if they are not on the embargo list. But shipments produced in whole or in part from raw materials of U.S. origin is a gray area. Both the parent firm and the Canadian subsidiary will have to weigh the risk of U.S. cancellation of export privileges.

Liberalized Canadian trade with Red China, some hold, might influence Washington to similar action. Reason-



SPANNING THE COUNTRY WITH STOCKPOINTS

Spearheaded by detergent oil-additives, the demand for barium chemicals has grown tremendously in a few short years.

To meet all needs, we have steadily increased productive capacity and mineral reserves. Six stockpoints assure fast delivery coast-to-coast.

As principal suppliers, Westvaco® offers experienced technical assistance with new applications as well as better-known uses of barium.

We will be glad to send you our informative 24-page booklet and to quote price and delivery on the products listed below.

BARIUM OXIDE BARIUM OCTAHYDRATE (Flake and Crystals) BARIUM PENTAHYDRATE (Flake)
BARIUM NITRATE BARIUM PEROXIDE BARIUM CARBONATE* BARIUM SULFIDE*

*Western Delivery only

fmc®

Westvaco Mineral Products Division
FOOD MACHINERY AND CHEMICAL CORPORATION

chemicals

161 E. 42nd St., New York 17 • Chicago Cincinnati Houston Philadelphia Newark, Calif.

BECCO® peroxygen chemicals • FAIRFIELD® pesticide compounds • FMC® organic chemicals • NIAGARA® insecticides, fungicides and industrial sulphur • OHIO-APEX® plasticizers and resins • WESTVACO® alkalis, solvents, phosphates, barium and magnesium chemicals

ing: a continued U.S. embargo would lose much of its remaining effectiveness when the Chinese can obtain materials from a country with industrial standards very close to those of the U.S. But, there's still no sign of a shift in Washington policy. Recently, Commerce Secretary Weeks asserted that the U.S. "won't gamble with national security," won't lift the embargo.

Hurdles to Clear: Neither government nor industry officials believe that the path to export sales would be easy—even if restrictions were removed. Here's why:

- Even if restrictions were eased, some items would remain under embargo. For example, while sulfates, phosphates and some forms of ammonia might be freed, it's likely that sodium nitrate and ammonium nitrate would remain barred. But it's the materials now classified as strategic that China wants the most and would constitute the greatest potential market. Any embargo would therefore narrow the range of Chinese purchases considerably.

- Special Chinese requirements in documentation constitute another serious problem. The Chinese usually insist upon quality certificates and performance guarantees that are not normally required in other markets. Shipments receive final inspection by the China Commodity Inspection and Testing Bureau and claims may be made up to 60 days after arrival at port of destination. Chinese authorities reportedly are fair in honoring trading obligations, however.

- Virtually all trade is now either controlled or performed by government agencies. Net effect: business must be done with the government. Companies re-entering the market must adjust to Chinese distribution patterns and demands that are completely different from pre-Korean War conditions. Red tape and slow payment are other factors.

- Prices for Canadian chemicals may slow rapid sales development. The bulk of Canadian output originates in Eastern provinces and the long freight haul may make prices uncompetitive.

- China currently has a dearth of hard currency. Although the country has substantial sterling reserves, the complete cessation of U.S. trade and very limited exports to Canada give

China a low dollar income.

- Russia and its satellites now dominate the Chinese market. Although Western imports will rise, eastern Europe will set the pace. Free-world countries will be competing against state-subsidized industries.

Despite these formidable barriers, Canadian chemical and government officials emphatically tell *CW* that

trade with Red China will forge ahead. Forsyth-Smith expects a "gradual and relatively moderate increase in exports." Others predict a faster growth—especially if loans and credits are granted, if government-to-government parleys occur and—most of all—if the embargo is substantially modified. The latter is now a distinct probability in view of recent developments.



No Pallet Needed for This Pile

Palletless handling of packaged products appears to be headed for a bigger role in chemical warehousing. Procter & Gamble has developed a new system that permits unit loads up to 412 cartons—total weight: 3,000 lbs.—to be moved without palletization. The system is currently being installed in P&G's regional and district warehouses.

Substantial declines in storage

and pallet costs are claimed. So far, only a few of the firm's 300 items have proved unsuitable for palletless warehousing. Cases of granulated soap, heavy cartons of liquid detergents, unit loads of crates, drums and 5-gal. cans have proved amenable to the method. Special hydraulic clamps, adjustable in width from 20 to 70 in. and mounted on standard fork-lift trucks, are the key to the method.

Baker REAGENT ACIDS

Uniform high purity . . . any quantity
. . . in the container of your choice



13 Gallon
Carboy



6 1/2 Gallon
Carboy



Truckload
Of Carboys
And Cases



Thro-A-Way
Bottles
And Case



Returnable
Bottles
And Case

ALL J. T. BAKER REAGENT GRADE ACIDS—regardless of container or quantity—conform to stringent specifications. Every lot—regardless of end use—is subject to rigid controls established by J. T. Baker Chemical Co. to assure you of the highest standards of purity in the industry.

WHY J. T. BAKER REAGENT GRADE ACIDS FOR LARGE-SCALE PRODUCTION USE? Because they combine the advantages of controlled high purity and economy. Because they do an efficient, faster, more predictable job in industry upon industry. Investigate J. T. Baker acids to help you reduce testing time . . . eliminate one or more purification steps . . . minimize variables . . . cut costs without sacrifice of quality or control . . . upgrade your product.

HOW PURE ARE J. T. BAKER REAGENT GRADE ACIDS? Specifications for J. T. Baker Nitric, Sulfuric, Hydrochloric and Acetic Acids and for Ammonium Hydroxide appear below. See how they might work for you.

WHAT CONTAINER TYPES ARE AVAILABLE? 6 1/2 and 13 gallon carboys; Thro-A-Way bottles and cases (6 five pint bottles per case); returnable bottles and cases (10 five pint bottles or 24 one pound bottles per case). Whatever quantity you need—pounds or tons—J. T. Baker offers you highest standards of purity—on-time shipment—economical price.

J. T. Baker Chemical Co.
REAGENT • FINE • INDUSTRIAL
Phillipsburg, New Jersey

BAKER REAGENT SPECIFICATIONS

	Acetic Acid, Reagent, Glacial *(HClO ₂) Meets A.C.S. Specifications	Hydrochloric Acid, Reagent *(HCl) Meets A.C.S. Specifications	Nitric Acid, Reagent *(HNO ₃) Meets A.C.S. Specifications	Sulfuric Acid, Reagent *(H ₂ SO ₄) Meets A.C.S. Specifications	Ammonium Hydroxide, Reagent *(NH ₄ OH) Meets A.C.S. Specifications
Assay (as *)	99.8%	36.5-38.0%	69.0-71.0%	95.0-98.0%	28.0-30.0%
Residue After Evaporation or Ignition	0.0010%	0.0004%	0.0004%	0.0004%	0.001%
Carbon Dioxide (CO ₂)	—	—	—	0.0001%	0.002%
Chloride (Cl)	0.0001%	—	0.00005%	—	0.00005%
Phosphate (PO ₄)	0.0001%	—	0.0001%	—	0.0001%
Sulfate (SO ₄)	—	0.0001%	—	—	—
Sulfite (SO ₃)	—	0.0001%	—	—	0.0001%
Total Sulfur (as SO ₄)	—	—	—	0.0001%	—
Substances Reducing Permanganate	**FACST	—	—	<0.00005%	**FACST
Nitrate	—	—	—	0.0001%	—
Ammonium (NH ₄)	—	0.0003%	—	0.000001%	—
Arsenic (As)	—	0.000001%	—	0.000001%	—
Heavy Metals (as Pb)	0.00005%	0.0001%	0.00002%	0.0001%	0.00005%
Iron (Fe)	0.00002%	0.00001%	0.00002%	0.00002%	0.00001%
Copper (Cu)	0.00005%	0.00005%	0.00005%	0.00005%	—
Nickel (Ni)	0.00005%	0.00005%	0.00005%	0.00005%	—
Specific Gravity	—	1.185-1.192	1.416-1.424	1.84	0.902-0.896
Free Chlorine	—	0.0001%	—	—	—
Substances reducing K ₂ Cr ₂ O ₇	PT	—	—	—	—

**Passes A.C.S. Test.

INDUSTRIAL CHEMICALS

We mine Copper, Iron, Zinc and Sulphur and are basic producers of their chemical derivatives. Our technical know-how in these basic materials is your assurance of exacting quality control and strict uniform consistency.

COPPER SULFATE

Industrial Crystals and all common grades.

MONOHYDRATED COPPER SULFATE

35% Copper as metallic packaged in steel drums at no extra cost.

COPPER CARBONATE

55% Copper as metallic. Light and dense grades.

CUPRIC CHLORIDE

37% Copper as metallic. Available in polyethylene-lined drums or bags.

CUPRIC OXIDE

Minimum 76% Copper as metallic. Technical grade . . . NOT A BY-PRODUCT.

COPPER

SULFURIC ACID

LIQUID SULFUR DIOXIDE

Highest commercial quality, available in tank cars, tank wagons, ton cylinders and 150-lb. cylinders.

CHLOROSULFONIC ACID

Iron less than 1.0 ppm as loaded. Water white. Delivered in glass-lined tank wagons, also in stainless steel drums.

SODIUM HYDROSULFITE

T-C HYDRO is a dry, white, free flowing, crystalline powder of uniform particle size and structure. It is dust free, assuring highest stability and uniformity.

PARA TOLUENE SULFONIC ACID, ANHYDROUS

Other organic Sulfonic Acids.

SULFUR

ZINC

MONOHYDRATED ZINC SULFATE

36% Zinc as metallic. White, free flowing powder.

ZINC OXIDE

Secondary Zinc Oxide.

IRON

FERRIC IRON SULFATE

Partially hydrated, free flowing granular form. Available in bags or bulk.

MANGANESE

MANGANESE SULFATE

65% Mn SO₄. Designed specifically for inclusion in mixed fertilizer.

MONOHYDRATED MANGANESE SULFATE

93% Mn SO₄ · H₂O. Highest purity, technical grade . . . NOT A BY-PRODUCT.

MANGANOUS OXIDE

Minimum 48% Manganese as metallic. Feeds, fertilizers, spray or dust grades.

Samples, specifications and detailed information upon request.



TENNESSEE CORPORATION

617-629 Grant Building, Atlanta, Ga.

SALES

Bulk by Bag

Truck delivery of bulk chemicals will soon get a new twist in Great Britain. Charrold Ltd. is coming out with a vehicle that will tote chemicals in bulk, bag them at the destination. Although the first trucks will be designed specifically for coal, modified conveyances are planned for chemicals and foodstuffs.

The unit is equipped with a conveyor to discharge its load and includes an automatic push-button sack-filling and weighing mechanism at the rear chute. Other features: a scale for the customer to check the delivered weight against the order, a counting mechanism to record individual and total deliveries, and a hydraulic lift to facilitate manual unloading.

Present designs call for a capacity of 8 tons; costs are pegged in the \$7,000 range. Comparable vehicles of U.S. manufacture are now used by several domestic distributors of liquid

chemicals for delivery of less-than-tankwagon quantities. The British development could render feasible similar deliveries of granular chemicals.

DATA DIGEST

• **Materials handling:** New catalog presents entire line of fork-lift trucks, straddle carriers, powered hand trucks and towing tractors in both gas and electric motor models. Clark Equipment Co., Industrial Truck Division (Battle Creek, Mich.).

• **Ammonium nitrate:** Booklet gives case histories and economic data for the use of ammonium nitrate as a blasting explosive. Spencer Chemical Co. (Kansas City, Mo.).

• **Polyethylene glycols:** Revised data sheet furnishes physical property data, specifications, shipping information and brief description of products and uses. Industrial Chemicals Division, Olin Mathieson Chemical Corp.



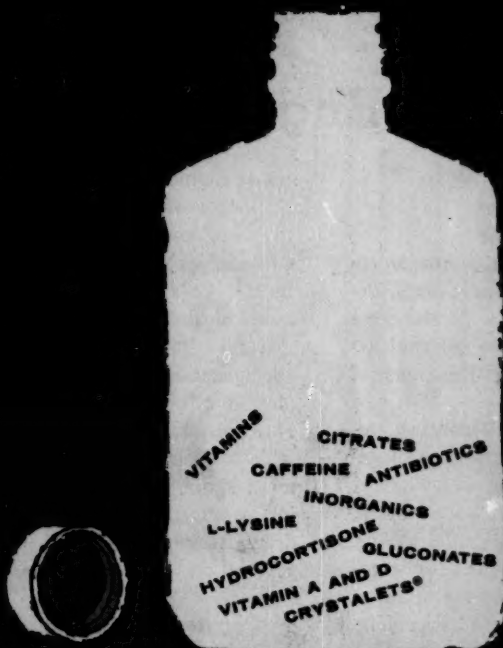
Blending Missile Fuel at the Pump

Filling stations for guided missiles are coming into their own, offer some interesting insights into an unusual formulation-blending problem and its solution.

Located at White Sands Proving Grounds, N.M., this new \$97,000 installation is the first ever built to blend and store missile fuel

components. Features: a unique system of storing inhibited red-fuming nitric acid and other components, special equipment to dispense ready-mixed and premetered fluids. Missiles are not filled directly: the blend is discharged into containers that are transported to the missile loading area.

Every
pharmaceutical
ingredient
is important
enough to
be
the
best.



Confidence doesn't happen overnight. It must be earned by continued satisfaction. It must be proven by quality performance. It takes years.

Pfizer merits this kind of confidence because Pfizer's reputation for quality began taking shape more than 100 years ago... and has grown in stature with the passing years.

This is the intangible ingredient that Pfizer offers to every pharmaceutical manufacturer today. When you purchase bulk medicinal products

from Pfizer, you get these advantages:

- Assurance that the highest quality-controlled standards have been met or exceeded.
- The convenience of ordering an ever-increasing number of products in new, easy-to-use forms.
- A dependable, constant source of supply.
- Technical information and service that can improve your products or production.

These benefits enable you, in turn, to give your customers better products and better service.

Manufacturing Chemists

Pfizer

for Over 100 Years

CHAS. PFIZER & CO., INC.

Chemical Sales Division

630 Flushing Ave., Brooklyn 6, N.Y.

Branch Offices: Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.; Dallas, Tex.

ENGINEERING

Though the question of a shortage of engineers is a moot one, subject to local interpretation (*CW*, July 13, p. 21), farsighted management men are fully aware that engineering manpower is a limited commodity. And even those companies that have no engineering staffing problems are constantly striving to increase the productivity of their technical personnel.

To pinpoint the areas of greatest potential improve-

ment in the utilization of engineering manpower, chemical process management this week has the results of a nationwide survey of engineering policies favored by various industries. Compiled by nine graduate students at Harvard University's Graduate School of Business Administration, the special report* compares existing practices with suggested improvements in several key phases. Following are the report's highlights:

Six Ways to Boost Engineers' Productivity

1 Organization

With continuing industrial expansion, management is relying more on engineers to provide new ideas, develop them into salable products. As a result, companies are finding it necessary to revise internal organizations to coordinate engineering functions at practically every level of operation.

Some engineering executives expressed concern, reports the Harvard group, that other parts of management don't understand—or really care—what the engineering department does. Such lack of appreciation, they conclude, is often responsible for slipshod assignment of priorities, unrealistic advancement of completion dates on engineering projects, and the addition or dropping of projects with a minimum of notice. The effect of such actions is not only to reduce productivity of engineering groups but also to damage the morale of the personnel.

What's needed is a clear definition of the relationships of the engineering department to the rest of the company. Engineers must know where they fit into the operation and what is going on in other departments. Because of the disproportionately large growth of engineering departments—with an attendant increase in supervisory levels between engineers and top management—communication may be difficult. To improve the flow of information, recommends the Harvard group, management should arrange discussion conferences with personnel or try any other scheme that will heighten the engineer's understanding of his place in the organization.

It's also management's responsibility to select the most efficacious internal organization for its engineering department—and then to guard against the pitfalls of its system. If, for example, the company uses the project method of handling jobs, management should

assist engineering personnel to make the necessary adjustments when groups are split up and redistributed to other projects. And because the project method complicates evaluation of the individual, management must take special pains to implement careful, systematic evaluation.

Under the systems approach to engineering, the specialization of engineers simplifies evaluation, reduces the problem of familiarizing men with new work. However, to prevent engineers from becoming bored with working too long on one type of job, management should set up a suitable rotation plan. Though job rotation may entail a short-range loss in productivity, it more than makes up for it, concludes the survey, by preventing stagnation and loss of morale.

2 Planning

Planning engineering activities for maximum output of useful work with a minimum waste of time is, according to the survey, one of the most fruitful areas for improvement. Though its importance is recognized, engineering planning is not being done effectively by most companies. A major cause: lack of coordination. The report cites several examples of successful engineering projects that were wasted because they weren't coordinated with marketing and sales objectives.

Another common planning abuse: management's failure to evaluate properly engineering work that can be done by technicians or other personnel with lesser or different training. There are, however, two schools of thought regarding the elimination of nontechnical work from the engineer's job. One school believes that the engineer's education and background can best be utilized on strictly engineering problems; the other feels that some nontechnical responsibility is necessary to his over-all development.

*"Engineering Manpower: How to Improve Its Productivity," published by Engineering Management Reports, P.O. Box 161, Cambridge 38, Mass. Price: \$18.50.



MAGIC INGREDIENT FOR LOW-COLOR ESTERS

Gulf Isooctyl Alcohol

Do your customers demand low color esters? You can make them . . . consistently . . . when you use Gulf Isooctyl Alcohol . . . the purest plasticizer alcohol money can buy.

This product purity is possible because Gulf produces its own closely fractionated heptene feed stock. Then, during processing, the product is quality-controlled every step of

the way. The result is isooctyl alcohol of highest quality and uniformity, backed by Gulf's research and solid experience in oxo-chemistry.

You can get immediate delivery of Gulf Isooctyl Alcohol in tank cars from Cincinnati, Philadelphia, and Port Arthur, Texas, and in tank trucks from Carteret, New Jersey. May we serve you? Call us today.



QUALITY CHEMICALS *from* **PETROLEUM**

Acetaldehyde • Aromatics • Ethylene-Propylene-Higher Olefins •
Methanol • Oxo Products • Pentaerythritol • Sulfur

Petrochemicals Department
GULF OIL CORPORATION
Gulf Building, Pittsburgh 30, Pa.

A third cause of wasted engineering man-hours, the survey shows, is crash projects. Few engineering departments are organized to handle these crises without greatly impeding the productivity of the department as a whole. And though many emergency projects arise from uncontrollable causes, most crash programs, the survey reports, are caused by poor project review programs.

To increase engineering productivity by better planning, the Harvard group recommends that management follow four key steps:

- Make sure that engineers are fully informed, that they understand management's objectives. This will largely eliminate time lost in the pursuit of methods that are inconsistent with the company's needs.
- Encourage suggestions, comments and criticisms by the engineers. In this way, management can keep up to date on work progress, can see where assistance may be needed.
- Act promptly to appraise, evaluate and coordinate with other departments material submitted for review and action by the engineering department.
- Review all projects systematically to spot time-wasting efforts that aren't caught or weeded out by the above actions.

3 Hiring

Overhiring or hoarding occurs inadvertently in many companies, the survey shows, because nonengineering executives have little way of gauging the urgency of engineering personnel needs. Government procurement contracts are indirectly responsible for much of the current hiring pressures throughout industry.

Present recruiting tactics, according to the report, also leave much to be desired. Emphasis on fringe benefits and the practice of recruiting at professional conventions, it states, detract directly from the professional status of engineers. And the institutional type of advertising currently used for recruiting not only is ineffective in attracting high-quality personnel but also creates dissatisfaction among engineers, adversely affects motivation.

The first step in reducing wasteful overstaffing, says the Harvard group, is for members of the management team to become more familiar with the work, the problems and the peculiar requirements of the engineering department. A better understanding of what available manpower can and should be able to accomplish will reduce requests for unnecessary personnel.

Since productivity is largely dependent on the quality of engineering personnel, it's important to recruit the best men when there is a real need for their services. This is where an effective hiring technique is required. Recommended means: personal interviews conducted by personnel representatives thoroughly acquainted with the specific skills and technical proficiency required. Recruitment through professional employment

agencies, with the company paying the agency's fee, may often bring better results—and cost less—than advertising.

4 Training

In-plant training programs are employed by 88% of the companies surveyed, to boost engineering productivity; 21% have formal training programs; 67%, informal or on-the-job training. In addition, many companies provide membership in professional societies as a means of extra-plant training; some send engineers to schools offering specialized engineering courses.

Though on-the-job training is the most effective and useful type of program, says the Harvard group, most companies are deficient in carrying out such training. To insure the desired result from in-plant training, in terms of increased productivity, it's up to management to set the training goals and to provide an adequate program for achieving them.

5 Leadership

Supervisory leadership is an essential link between top management and the lower levels of the engineering department. And though leadership is one of the most important influences on engineering productivity, reports the survey, few companies fully exploit their engineering supervisors' potentialities in this respect.

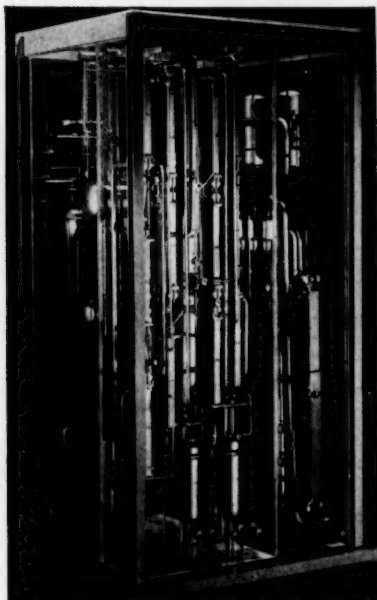
To strengthen leadership at the lower supervisory levels, management must evaluate engineers not only in terms of technical competence but also as potential administrators. Likely candidates should then be given some form of training, encouraged to accept authority delegated to them.

6 Compensation

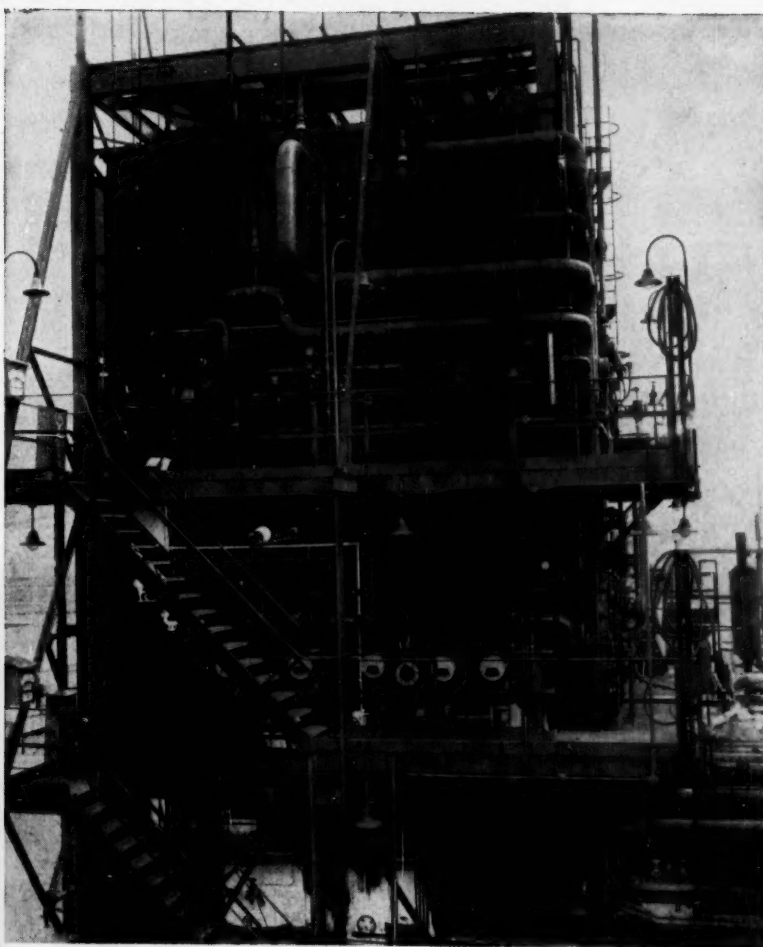
The keen competition for the services of engineering graduates has resulted in a substantial increase in starting salaries for young engineers over those of graduates in other fields. However, the report makes it clear that the spread between engineering salaries and production wages is decreasing, while the margin between engineering and administrative salaries is widening. Because compensation affects motivation and, in turn, productivity, it's important for management to reward engineering personnel in proportion to their contribution to the company's success. Chief complaints of engineers: salary administration is handled by the personnel department rather than by the engineering supervisors; raises are too often based on seniority rather than true ability.

In the opinion of the Harvard investigators, compensation doesn't affect productivity as much as do other factors. This is probably the case, they say, because many companies have compensation policies suited to engineers' needs. For those companies in which engineering salaries are out of line with other

"Cold Box" is part of an ammonia plant. The Atlantic Refining Company built it to use the once-burned hydrogen by-product of the catalytic reforming of high octane gasoline. Here the hydrogen by-product is purified and nitrogen is recovered by liquefying and fractionating air from the atmosphere.



Model of Plant shows maze of stainless steel pipes and pressure vessels used for nitrogen separation and hydrogen washing. Actual plant was built by Hydrocarbon Research Inc., N. Y., with a capacity of 100 tons of anhydrous ammonia per day.



*Another important job for nickel-containing
Stainless Steel because...*

The Problem: -325°F

This "cold-box" separates nitrogen from the air and purifies hydrogen. It's a step in the production of anhydrous ammonia at The Atlantic Refining Company's South Philadelphia plant.

Here, the temperature dips as low as *minus* 325°F . Much of the equipment operates at *minus* 140°F .

At those temperatures carbon steel is as brittle as glass. You can see why equipment has to be made of special material. And it is.

Designers of the plant knew that a safe and practical material to use for much of the equipment was

austenitic chromium-nickel stainless steel.

With 8% nickel, stainless steel has the ability to retain toughness and ductility right down to as close as we can get to absolute zero. And 18-8 stainless steel has the necessary strength to handle the relatively high (100 to 440 psi) operating pressures.

Do you have a low temperature problem? If so, you'll find "Properties of Stainless Steel at Low Temperatures" extremely helpful. And Inco's Development and Research Division is ready to help you.



THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street
New York 5, N. Y.

The Bio-Chemical Department



THE ARMOUR LABORATORIES

A DIVISION OF ARMOUR & COMPANY

offers over 60 regular items to the pharmaceutical... cosmetic... dairy... and chemical industries... including—

- ENZYMES
- ANTIOXIDANTS
- HORMONES
- FINE CHEMICALS
- GLANDULARS

plus 20 special items for experimental purposes, such as—

- ANIMAL BLOOD FRACTIONS
- BIOCHEMICALS, INCLUDING SPECIAL ENZYMES
- ORGANIC CHEMICALS

and... custom processing in the fields of extraction, concentration, purification, formulation and lyophilization

Write for additional
information and details:

P. O. Box 511, Kankakee, Ill.

ENGINEERING

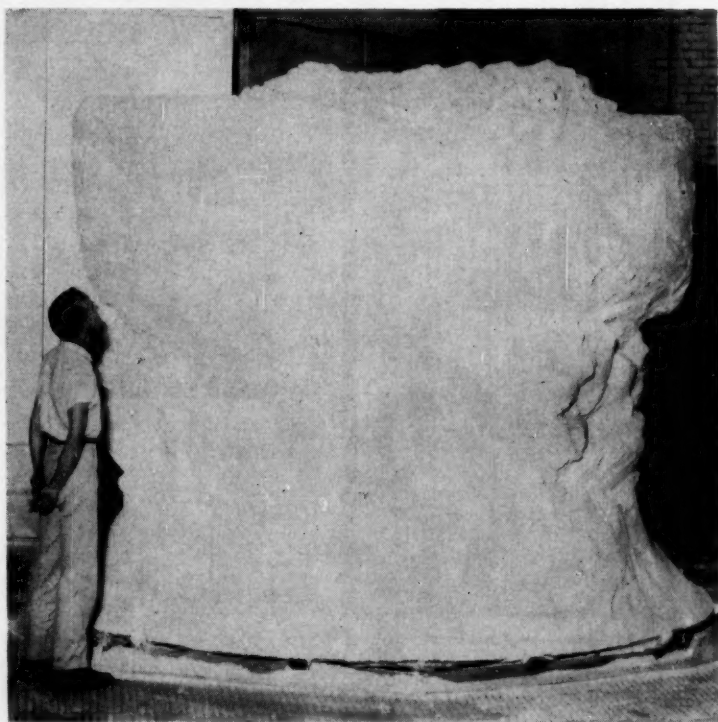
departments, a revision of salary policy to put engineering on an equal footing with other departments is recommended.

Shortage Ahead? Whether the present shortage of engineers is real or imagined, there are many indications that the demand for engineering services may exceed the supply in the not-too-distant future. Engineering enrollments in colleges and universities aren't keeping pace with industrial growth; many engineers are being lured into technical sales and other more lucrative jobs.

The Harvard investigators cite pre-

dictions that the number of engineering graduates will rise gradually from last year's 23,000 to about 43,000 in 1964. But by '65, the total supply will be only about 1,223,000; the demand, 1,680,000.

The problem could become particularly acute for the chemical process industries, in which engineers are employed at practically every level of operations. And though increased productivity alone may not be the entire answer to the problem, it would go a long way toward alleviating the squeeze of a critical engineering shortage.



Man-Made Mica Mountain

Not an indoor iceberg, but the biggest piece of synthetic mica ever made is the object of curiosity above. The large Synthamica melt (40 tons of raw materials) by Synthetic Mica Corp. (Caldwell Township, N.J.) resulted from experiments in the control of furnace operations and cooling for the production of large crystals. Just three years ago (*CW*, May 22, '54, p. 46), parent company Myncalex Corp. of America was still

in pilot-plant operation, hoped to produce 4x4-in. single crystals. Objectives of current production tests: the growth and mechanized splitting of large-area crystals; the development of a reconstituted sheet of mica platelets without the use of chemical binders. In addition to freeing mica users from dependence on foreign imports, the synthetic material is said to be superior to natural mica in applications above 1000 F.

LOOKING FOR . . .
fume depressant?
surface active agent?
wetting agent?
an emulsifier?
acid inhibitor?

AKWEONS

#674

. . . a new fatty acid derivative by Swift & Company

Akweons 674 is a versatile new fatty acid derivative which has demonstrated unique and outstanding properties in uses such as: a wetting agent, surface active agent, corrosion inhibitor, and emulsifier. Users report excellent results where it has been used as an acid fume depressant.

It is a dark reddish-brown liquid which pours readily at room temperature and is soluble in acidic, alkaline or neutral solutions.

Akweons 674 has found ready acceptance as an acid additive for pickling among steel producers and fabricators because, they say, it offers a trio of advantages found in few, if any, such product:

- As an acid corrosion inhibitor, Akweons serves to protect the base metal after scale and other contaminants have been removed.
- It serves to minimize "sulling" or flash rusting of the pickled steel after rinsing.

- Akweons reduces noxious acid bath fumes to promote better working conditions and serves to protect plant equipment by attacking corrosion at its source.

What can AKWEONS 674 do for you?

Because of its excellent surface activity at all pH values, AKWEONS 674 can be useful as a surface active agent or wetting agent, emulsifier or fume depressant. It should be particularly useful in acidic solutions in which most surfactants are ineffective.

This wide range of properties is available to offer new or improved process and product possibilities—perhaps for you. Swift & Company will be glad to provide details and a trial quantity for your evaluation. Just return the coupon or write for details.



To Serve Your Industry Better

SWIFT & COMPANY Technical Products Dept.
1840 165th St., Hammond, Ind.

O-32

- ☐ Please send details on AKWEONS
- ☐ Please send trial order form with details

Company _____

Address _____

City _____ Zone _____ State _____

Your Name _____

PRODUCTION



Farm Out Your Maintenance Headaches?

"It wouldn't work for us." With those final words, a Baltimore-area chemical plant manager terminated the call last week of a contract-maintenance firm's salesman. "Some of our clients save 40% on maintenance," the salesman had argued, "and petroleum refiners swear by this kind of service." The plant manager nodded agreement, but still insisted that it wouldn't work for his company.

There is nothing new about farming out certain jobs that maintenance staffs are not set up to handle—boiler cleaning and repair is a good example. And most chemical plant managers won't think twice about contracting for this sort of work. But now, in addition to specialists, firms such as Catalytic Construction in the East; Fluor, and Burke and Reynolds on the West Coast; and Brown & Root, C. A. Turner Construction, Lummus and a host of others on the Gulf Coast are handling general, day-to-day maintenance for oil refineries and

some chemical plants. Their pitch: With operating costs on the increase, contract maintenance permits plant management to concentrate on production and, at the same time, obtain more efficient maintenance.

Fluctuating Workloads: The biggest maintenance headache faced by management is workload fluctuation. With the trend toward continuous processing, equipment down-time must be held to a minimum. For, where one large system replaces a number of smaller-batch units, a shutdown means complete loss of production. To get the system back onstream quickly, a larger maintenance crew than is often at the firm's disposal is required. Were the firm to hire the extra crew, once the system goes back onstream, it would be saddled with a maintenance staff larger than it needs for day-to-day maintenance. This means either laying off the extra crew and losing goodwill in the area, or keeping the crew at the expense of manpower efficiency.

Moreover, the men required must very often be highly skilled. And it is always difficult to hire a number of skilled workers on short notice.

Contract maintenance firms supply this flexible work force, usually drawn from construction ranks. For example, Catalytic Construction uses mechanics in the A.F.L. building-trades unions.

This type of service is a natural for petroleum refineries where equipment turnarounds are accepted procedure and tremendous fluctuations in manpower requirements are common. Union Oil, for example, has been using this type of setup since 1948, keeps a few contract people in the refinery on a craft-supervisory level to help familiarization, speed up turnarounds when a couple of hundred contract workers are moved in.

Collier Carbide and Chemical, a Union Oil subsidiary, uses the same approach for chemical plant operations, figures contract work on big



For WATERPROOFING— nothing equals PICCOPALE!

The versatile petroleum resin

- * This petroleum polymer is resistant to moisture, acids, alkalis, heat, light.
- * Low cost permits its use as a basic raw material. Excellent compatibility with other materials; available in any quantity, and in a variety of grades.
- * Widely used in adhesives, coatings, paints, paper, textiles, rubber, floor coverings, and many other industries.

May we assist you in applying PICCOPALE to your production needs?



PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.

Clairton, Pennsylvania

Plants:

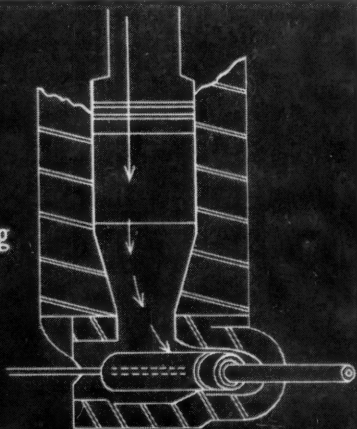
Clairton, Pa.; West Elizabeth, Pa.; and Chester, Pa.

Sales Offices:

Atlanta, Boston, Chicago, Cincinnati, Cleveland, Detroit, Jacksonville, Los Angeles, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, San Francisco

Easy-to-use fibrous powder proves remarkably effective binder and plasticizing agent

Solves problems of wet and dry strength, stability, shrinkage, lubricating and binding in all types of extrusions and pressings.



KELCOSOL

highly refined sodium alginate in easy-to-use fibrous powder form dissolves readily in cold or hot water to form a thick, smooth solution proving the answer to many plasticizing, lubricating and binding problems.

With Kelcosol, extrusions and pressings are non-sticking and have increased green strength. Surfaces are smoother with greatly improved dimensional stability. Structure is far more uniform.

If you produce extrusions or pressings, including welding rods, tubing, metal powder extrusions, ceramics, Kelcosol may prove to speed your production, cut your processing costs, improve your product.

YOURS ON REQUEST: Kelcosol Technical Bulletin describing composition, properties, compatibilities, and uses. *Plus* free Kelcosol Sample, yours without obligation. Write or phone your nearest Kelco regional office today.



KELCOSOL

a product of **KELCO COMPANY**

120 Broadway, New York 5, N. Y.
20 N. Wacker Drive, Chicago 6, Ill.
530 West Sixth St., Los Angeles 14, Calif.
Cable Address: Kelcoalgin, New York

PRODUCTION

jobs accounts for about 15-20 of maintenance work. Sohio Chemical is another oil company affiliate that uses the contract approach, has its own staff of about 25 men for day-to-day maintenance and all instrument work. The permanent staff probably accounts for just about half of total maintenance man-hours worked, can't cope with heavy maintenance of shut-downs.

The Celanese Chemical Division supplements its own maintenance staff with contract maintenance crews at both Pampa and Bishop, Texas. Manufacturing Manager Ernest Lindsay points out that maintenance forces at both plants are well-rounded, but just can't handle peak loads and emergencies. By using outside crews during these periods, the permanent staff is stabilized, there is no hiring-and-firing problem.

New plants often find distinct advantages in this aspect of contract maintenance. Catalytic Construction has handled all of Sun Oil's maintenance at Sarnia, Ont., since the 1953 startup. Alan McCone, Assistant to the president of Catalytic, gives these average manpower figures: 122.4 in '54, 90.9 in '55 and 61.3 in '56. He points out that plant size has remained the same as at the outset, but the type of workload has changed from 80% emergency, 10% preventive, 10% capital in '54 to 70% preventive maintenance at the present time. "Had a permanent labor commitment been made by Sun in 1954 or '55, it would have proved to be a very expensive step," says McCone.

Tidewater's new Delaware City refinery has started off with contract maintenance. And Celanese, at its new plastics-division low-pressure polyethylene plant at Houston, picked a contract maintenance setup. "We have a new plant and are using a newly developed process. Until our maintenance volume is known, we won't know how many maintenance men to employ. If we had to hire and fire frequently, it would create bad personnel relations," says Plant Manager Burt Cash.

Even firms that don't use contract maintenance recognize the hire-and-fire disadvantage. But most feel that peaks and valleys in maintenance workload are too small to justify calling for outside help unless they have special projects or unusual emergen-

BRIEFS

for buyers of

Phosphorus Chlorides

Sodium Sulfides

Carbonate of Potash

Oxalic Acid

Phosphorus chlorides ... growing, growing

You will be hearing more about the Hooker phosphorus chlorides described below. Current trends in organic synthesis are creating a growing need for the properties they put at your command.

Phosphorus oxychloride, POCl_3 , is something you'll want to investigate if you're developing organic phosphates or plasticizers, gasoline additives, fire-resistant hydraulic fluids, or chlorinated products.

As a chlorinating agent, it neatly supplements and broadens your already wide choice of Hooker chlorine compounds. It's used also as a catalyst for intermediates and dyestuffs, and in preparation of medicinals such as sulfa drugs.

A clear water-white liquid, it assays 99.5% min. POCl_3 ; contains no free chlorine or phosphorus pentachloride.

Phosphorus trichloride, PCl_3 , is fast winning repute as a convenient entry to many types of organic synthesis. You can use it as a chlorinating agent in manufacture of organic acid chlorides; as a condensing agent in preparation of organic aldehydes; in making phosphite and phosphonate esters; and as a catalyst in certain chlorination reactions. It's a clear water-white liquid of 99.5% minimum purity.

If you're already buying either of these versatile products in quantity, or plan to do so soon, be sure your supplier has what it takes to get the material to you promptly. Both these chemicals require special handling; volume deliveries are usually made in lead-lined, insulated tank cars.

When you purchase from Hooker, you can be sure, because you have at your disposal the largest fleet in the country of these special cars.

For contract information, write us. For technical data sheets, just check the coupon.

Sulfide economics

A different molecule might save you money. If you're buying sodium sulfide as a source of combined sulfur, here's a way to get the sulfur for about 5 cents a pound less.

Just switch to Hooker sodium sulfhydrylate.

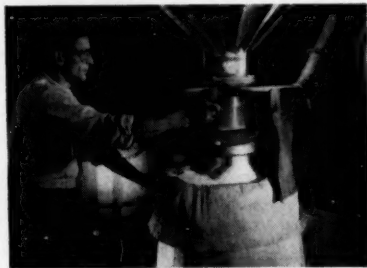
In 100 lbs. of sodium sulfide, you get about 24.6 lbs. of combined sulfur. The same weight of sodium sulfhydrylate gives you about 40 lbs. of sulfur—about 62.6% more.

At prevailing prices, the sulfur in

sodium sulfide costs you about \$.224 a pound. In sodium sulfhydrylate, it's only about \$.169 a pound.

Your actual saving is larger than the difference—because sodium sulfhydrylate contains less water of crystallization, so freight cost is lower.

If this approach to lower-cost sulfidity looks like a good one for you, why not explore it with your Hooker salesman? He'll gladly help you review the facts with your specific needs in mind.



K_2CO_3 :

so pure you can see through it

Chances are good that some of this free-flowing white material occupies a prominent place in your living room.

One of many interesting uses of NIALK® carbonate of potash is in making clear glass. Your 21-inch TV picture tube contains about five and a half pounds of carbonate. It also goes into glass you read through, fluorescent lights you read by, glass you drink from, glass *objets d'art* you look at in museums.

Carbonate of potash has many other uses, but the important point about this use is that the carbonate must be of high purity. Ours is.

One essential step that helps pre-

serve this purity is the packaging operation you see here. Carbonate of potash in solid form is highly hygroscopic, so we protect it with a moisture-resistant lining in every barrel, fiber drum, or bag of it we send you. If you use large amounts, we ship it to you in specially designed 50-ton dry-chemical hopper cars.

You can get NIALK K_2CO_3 as a liquid at 47-52% strength, though most users prefer to save freight by having it shipped in one of these four solid forms:

1. *Hydrate, regular*, 83.5-84%. This dust-free form is made from liquid K_2CO_3 which we evaporate to crystallize the solid sesquihydrate.

2. *Calcined, regular*, 99+%. The hydrate form is calcined to take water content down to less than 1%. It's granular, dust-free.

3. *Calcined powder*, 99+%. If your process won't accommodate the granular form, you can have this powdered form in your choice of three particle sizes.

4. *Powder*, 91-94%. High purity ... dust-free granular forms ... wide choice of containers ... moisture-resistant packaging for dry forms—these are some of the reasons why industry buys more NIALK carbonate of potash than any other brand.

May we show you how these advantages can help your process move more smoothly?

New data on oxalic acid

To keep your technical file up to date, send for our newest publication on OLDBURY® oxalic acid: Data Sheet No. 789.

It lists specifications, typical physical properties, packing data, uses, and handling precautions. For a copy, check the coupon.

For more information on chemicals mentioned on this page, check here:

- | | |
|---|--|
| <input type="checkbox"/> Phosphorus Oxychloride | <input type="checkbox"/> Sodium Sulfide |
| <input type="checkbox"/> Phosphorus Trichloride | <input type="checkbox"/> Carbonate of Potash |
| <input type="checkbox"/> Phosphorus Pentachloride | <input type="checkbox"/> Oxalic Acid |
| <input type="checkbox"/> Sodium Sulphydrylate | <input type="checkbox"/> New list of products—Bulletin 100-A |

Clip and mail to us with your name, title, company address. (When requesting samples, please use business letterhead.)

HOOKER ELECTROCHEMICAL COMPANY

708-1 FORTY-SEVENTH STREET, NIAGARA FALLS, N. Y.

NIAGARA FALLS • TACOMA • MONTAGUE, MICH. • NEW YORK • CHICAGO • LOS ANGELES



cies. Stauffer, for example, says it sometimes calls in outsiders at one West Coast plant if maintenance backlog exceeds three months' work.

Some companies find it safer to use outside workers if they have been trained for certain jobs. One firm says it wouldn't want its own men to paint water towers or the underpinning on drying towers. Another says it would hire Dowell for special cleaning jobs.

Size Factor: Some firms feel that their plant size is a factor in choosing between contract or their own maintenance staffs. One Gulf Coast plant with about 1,000 employees says its maintenance crew is large enough to handle all work satisfactorily.

On the other hand, Joe D'Angelo, manager of Reichhold Chemicals' Elizabeth, N. J., plant, which is about a quarter that size, points out that unless his plant were larger, it couldn't support a full staff with skills such as plumbing, carpentry, masonry, sheet-metal and iron working, painting. If the plant were somewhat smaller, it might be able to get along with less outside help because the need for some of these specialized skills would be considerably less as a result of reduced complexities in operations, D'Angelo adds.

But although size is not always a big factor, location is. As one firm, the only large manufacturing plant in the area points out, "Contract maintenance just wouldn't be practical, since we employ most of the people in the area anyway." Another firm points to the chemical firms that are located in areas near petroleum refineries—where they have a choice of contractors—as being in the best spot to give contract maintenance a try.

One vs. Many: Of the firms using contract maintenance, there are several schools of thought as to the type of service that's best. Some feel that several contractors, each specializing in a particular field, is best—"It's not good to put all your eggs into one basket." Others prefer a single contractor who will supply men for all their needs. Catalytic's McCone points out that this latter type, plus a contract to do all the plant's maintenance (rather than merely supply turnaround or a permanent supplemental force), is the most efficient and economical. There are fewer conflicts of interest and the contract maintenance crew

becomes an integrated part of the plant—the plant supplies only enough staff to coordinate the effort and act as liaison.

In addition, this arrangement overcomes one of the objections some firms have: "Our own maintenance force knows exactly where everything is, doesn't need pipes to be traced or 'dos' and 'don'ts' to be spelled out for them. Therefore, they can perform the job more quickly and efficiently."

On the other hand, some firms resist the idea of outsiders becoming too familiar with their processes.

Other chemical companies point out that when contractors have permanent crews in plants, one of their selling points is lost.

Union Problems: But one of the major reasons why many chemical companies insist on treating contract maintenance cautiously is the problem that may be created with unions. (One giant chemical firm refused to discuss contract maintenance, even when it knew its views would not be published—"too touchy a subject.")

In some cases, contracts with the union will not permit the use of contract maintenance. But often there is no conflict—in some plants, the union contract merely states that no work can be done by outside help if it means laying off a plant employee. The usual procedure is for contractors to use union workers in union plants, non-union workers in nonunion plants.

Contract maintenance firms, themselves, appear to face a union problem—the area from which union members may be drawn for a specific job. Certain fringe benefits (e.g., group insurance, paid vacations) do not have to be added to the basic wage rates of construction workers. But for workers who will fill "running" maintenance jobs (i.e., day-to-day maintenance on equipment in production service), certain additional benefits must be paid. Both the unions and the contract maintenance firms recognize that there is a fringe area between the two types. And, if contract maintenance really takes hold in industry, additional considerations may have to be made for the construction workers that are used. But at least one Gulf Coast contractor does not see this as a major drawback: "Greater efficiency will still make contract maintenance cheaper."

EQUIPMENT

Flowmeter: A new model of the Laub Electro-Caloric Flowmeter, designed specially for measuring flow rates of fluids in laminar flow, is offered by Industrial Development Laboratories, Inc. (Jersey City, N. J.). Tagged Model FM 100, the unit will measure flow rates of a few pounds per hour or those of highly viscous materials by determining the rate of heat transfer through the boundary layer of fluid. Measuring elements do not come into contact with the fluid. Nine sizes—for ¼- to 8-in. pipes—are available.

Reactor: The Experimenter is a new small-scale continuous reactor that Marco Development Co. (Wilmington, Del.) says permits extrapolation of laboratory results directly to full-scale production equipment. The reactor is designed for reactions that require mixing, heat transfer, such as condensations, polymerizations. The Experimenter has a series of mixing chambers, each with a double impeller separated by a disk baffle. The first impeller is pitched to move the material across the solid heat-transfer plate as a thin film. The second impeller is reverse-pitched, pulls the material back across a second heat-transfer plate. Marco claims intimate mixing throughout the cycle, close control over exothermic reactions.

Reciprocating Pump: Balcrank, Inc. (Cincinnati), has come up with a new air-operated reciprocating pump in stainless steel. The firm says its cost is slightly higher than conventional reciprocating pumps, but stainless construction permits use in corrosive applications previously requiring more expensive centrifugal pumps of stainless steel. The pump's seals and cups may be replaced in a few minutes, saving on down-time. Fluids from —30 to 200 F can be handled with discharge pressures of 1½ times the supply-air pressure (30-200 psi. air). Capacity: 1 to 20 gal./minute.

Back-up Rings: Sparta Mfg. Co. (Dover, O.) now offers Teflon back-up rings for use with rubber O-ring seals in hydraulic systems. The new back-up rings are said to eliminate O-ring deformation, provide a better seal and reduce wear.

Ever See a Pedigree for Rubber?

[illegible]

This Quality Report is the FR-S Pedigree . . . Your Assurance of Rubber that Meets Highest Specifications

This Quality Report gives you a complete picture of every pound of FR-S rubber you buy. It accompanies *every* shipment, and summarizes the results of more than 50 different tests that control the uniform quality of FR-S—from the purity of the water that flows into the giant reactors, to the physical and chemical properties of your finished product. It's your assurance that you're getting the finest rubber man can make . . . modern rubber that meets your most exacting specifications in every respect. Why not learn how FR-S

can improve your product — just mail the coupon below:

Synthetic Rubber & Latex Div., Dept. A
The Firestone Tire & Rubber Co., Akron, Ohio

- ☐ Please supply technical information on FR-S Rubber.
☐ Please have a Firestone Technical Representative call on us.

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

Product Manufactured _____



Firestone

BEST IN RUBBER



CPI Makes a Better Safety Record

As the charts and tables (right) show, the chemical industry improved its over-all safety record for the third straight year in 1956. But, lest these just-released National Safety Council figures be cause for complacency, the chemical industry gained little ground on the leaders for all industry, still stood eighth in accident frequency rate and only sixteenth in accident severity rate of the 40 industries reporting.

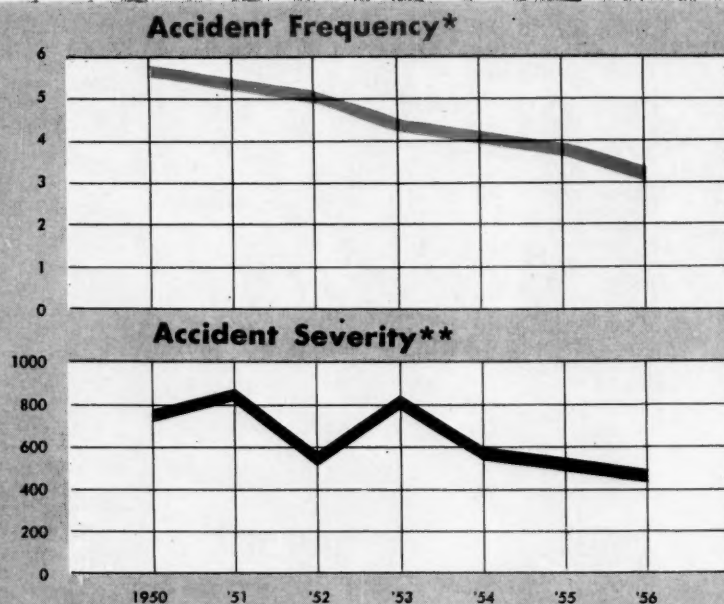
The accident frequency rate dropped for the sixth straight year, hit a low of 3.38 (measured by the number of disabling injuries per million man-hours worked). The severity rate was 462 (measured by the number of days lost per million man-hours worked).

The rates compared quite favorably with the 1955 record, which was not quite as good as originally reported (*CW*, Aug. 25, '56, p. 62). Revisions have pushed the '55 frequency rate from 3.21 to 3.77 and the severity rate from 521 to 604. Based on the revised figures, accident frequency dropped 10%, severity 24% in '56.

Individual Standings: Of the 18 chemical process industries that collectively make up the statistics, synthetic rubber manufacturers had the best accident frequency record. Photographic film makers showed the biggest improvement. In all, five of the process industries reported rates below 1.60, compared with two in '55.

And in severity rate, where the biggest gain was made, 11 of the process industries improved on their '55 records. Photographic film makers chalked up the best record. But significant gains were turned in by manufacturers of high explosives, industrial gases, and soap and glycerine. Five industries came through with rates below 200, compared with two in '55.

As in the past years, many of the more hazardous process industries turned in excellent records. And, if the present accident trend continues, the chemical industry as a whole may soon lose the hazardous tag some people attach to it.



Chemical Process Industries	Accident Frequency*		Accident Severity**	
	1955	1956	1955	1956
Acids	3.20	4.40	380	560
Alcohol and wood distillates	7.92	12.58	152	923
Chlorine and alkali	5.17	5.03	710	989
Coal tar products	6.74	4.72	1,261	1,520
Fats and oils	11.25	9.83	570	854
Fertilizers	11.18	10.82	3,447	1,953
Fuses and powder	1.76	2.88	562	2,111
High explosives	1.63	1.59	1,221	363
Industrial gases	6.36	7.01	578	178
Laboratories	1.59	1.52	231	164
Paint and varnish	1.14	3.82	307	293
Pharmaceuticals, fine chemicals, cosmetics	5.12	3.91	354	215
Photographic film	5.41	1.56	493	109
Plastic materials	2.34	1.58	483	362
Salt	9.04	9.08	428	222
Soap and glycerine	2.55	3.51	636	169
Synthetic fibers	1.67	1.68	138	217
Synthetic rubber	2.08	1.42	299	122
All chemical process industries	3.77	3.38	604	462

*Frequency rate is number of disabling injuries per 1 million man-hours of exposure.

**Severity rate is number of days lost per 1 million man-hours of exposure, including charges for permanent disabilities and deaths.

Commercial quantities of

ETHYLENEDIAMINE

98%

now

on stream at

DOW

Consider the production savings a 98% concentration of ethylenediamine can offer you. Then call Dow.

This is the first time such a highly concentrated form of ethylenediamine has been made available in commercial quantities.

Write for a sample. See for yourself the saving you can make.

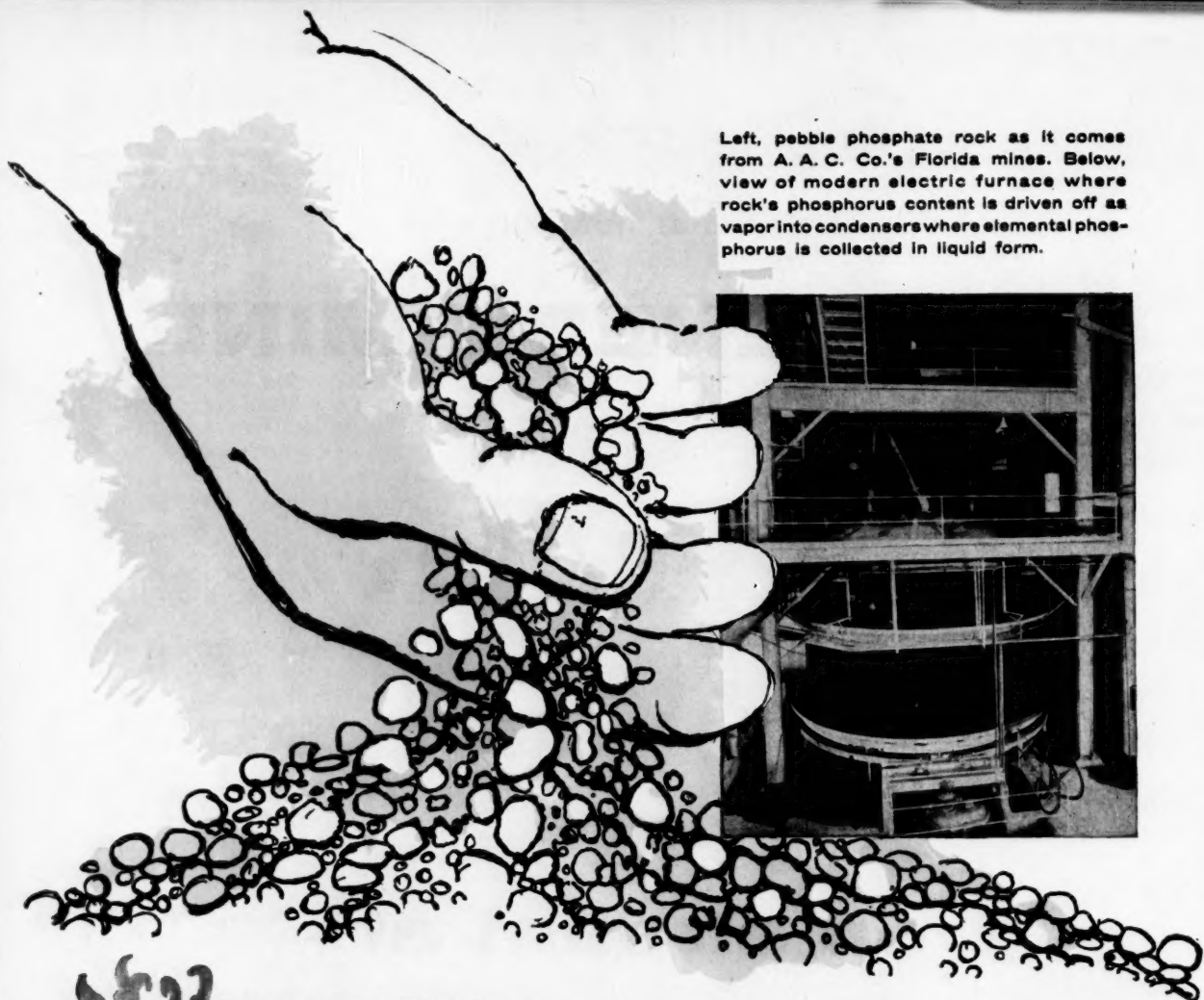
If you need commercial quantities, don't hesitate to place your order. We can assure you of prompt delivery.
THE DOW CHEMICAL COMPANY, Midland, Michigan.

Special Note: There is no increase in price over our old 76% ethylenediamine.

YOU CAN DEPEND ON

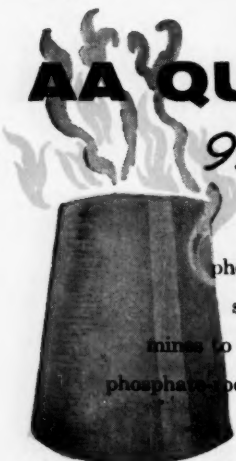
DOW

Left, pebble phosphate rock as it comes from A. A. C. Co.'s Florida mines. Below, view of modern electric furnace where rock's phosphorus content is driven off as vapor into condensers where elemental phosphorus is collected in liquid form.



AA QUALITY Elemental Phosphorus

99.9% pure... Electro-Thermally produced



Elemental Phosphorus cote

Whether used in its 99.9% pure elemental form or in the ever-widening range of phosphorus derivatives and compounds, AA QUALITY Elemental Phosphorus assures highest standards of quality and uniformity. *Quality* you can rely on, because of rigid control from mines to finished products. *Service* you can depend on, because of large-scale production and ample phosphate-rock reserves. Assured quality, security of supply, prompt service—sound reasons for using AA QUALITY Chemicals. Write for further information and samples.

"From our mines to your plant"

THE AMERICAN AGRICULTURAL CHEMICAL COMPANY

Chemical Division: 50 Church Street, New York 7, N. Y. • 30 plants and offices serving U. S., Canada, Cuba



AA QUALITY PHOSPHORUS PRODUCTS

PHOSPHORUS AND PHOSPHORUS COMPOUNDS

Elemental Phosphorus (Yellow-White)
Phosphorus Red (Amorphous)
Phosphorus Pentasulphide • Sesquisulphide
Ferro Phosphorus (Iron Phosphide)

PHOSPHATES

Disodium Phosphate • Trisodium Phosphate
Dicalcium Phosphate • PHOS-FEED® BRAND

PHOSPHORIC ACID

85% N. F. Grade • 75% Pure Food Grade
50% Pure Food Grade
Agricultural and Other Grades

PHOSPHATE ROCK & FERTILIZERS

All grades Florida Pebble Phosphate Rock
Superphosphate
Complete Fertilizers

OTHER AA QUALITY PRODUCTS

FLUORIDES AND FLUOSILICATES

Sodium Fluoride • Ammonium Fluosilicate
Magnesium Fluosilicate
Potassium Fluosilicate
Sodium Fluosilicate • Zinc Fluosilicate
Fluosilicate Mixture
Ammonium Fluoborate
Aluminum Fluoride
Magnesium Fluoride

GELATIN

KEYSTONE® Gelatin: Edible, Photographic, Pharmaceutical, Technical

OTHER PRODUCTS

Animal Bone Charcoal
Bone Black Pigment (COSMIC® Blacks)
Keystone Ammonium Carbonate
Sulphuric Acid • Insecticides-Fungicides

Technology

Newsletter

CHEMICAL WEEK
August 3, 1957

Clues to ICI's production of gibberellic acid may be contained in a recent Australian patent application (24,274/56). It describes a fermentation process. Cultivation of an active strain of *Gibberella fujikuroi* is carried out in an aerated nutrient solution to which carbon dioxide is introduced.

Watch for word soon about work at Koppers on the treating of refractory bricks to lengthen their life-span. The process presumably would be similar to Koppers' impregnation of wood. Encouraging results were reported by Koppers' President Fred Foy at the dedication of the firm's new niacin plant last week.

Progress toward control of thermonuclear reactions is being posted in Great Britain this week. The British are completing an experimental apparatus that, they say, will enable them to investigate discharges on a much larger scale than heretofore possible. The work was reported at a London press conference by Sir John Cockcroft.

In brief, they're passing large currents through thin gas streams to heat the gas and generate a magnetic field that contains the gas stream. That way, the heat can be focused at a point away from the walls of the container. However, because of turbulence in the stream, occasional local contact between the walls of the container and the gas takes place. Since the temperature of the gas is several million degrees centigrade, the walls of the container are immediately vaporized. But the British hope they can control the turbulence through the application of external magnetic fields.

Essentially, then, they're trying to side-step the problem of a container for the reaction by housing it completely in an electric field. A similar approach is being tried in this country. Metropolitan Vickers Electrical Ltd. is the principal contractor for the work at Harwell.

In the new equipment, it is hoped, temperatures of several million degrees will be reached. If so, fusion reactions should be detectable. The goal, of course, is a temperature of 100 million C.

An East German firm is working on a process for making calcium from alloys. VEB Elektrochemisches Kombinat has been trying to work up an economic method of getting the metal from calcium-containing alloys of copper, lead and silver. The calcium is distilled off at 1400 C in a vacuum. It can also be made from mercury-calcium amalgam. But in that case, the mercury is distilled off.

In this country, Air Reduction is working on a process for distilling calcium in the decomposition of calcium carbide with heat and

Technology Newsletter

(Continued)

vacuum (*CW Technology Newsletter*, April 20). Previously, Ethyl Corp. had developed a process for recovering the calcium as a by-product of sodium manufacture. Ethyl found, however, that although it produced a high-quality product, there was a limited market for a higher-priced material.

•
Titanium dichloride and titanium trichloride are now available in developmental ("multipound") quantities from New Jersey Zinc. The firm points out that the products are potentially significant ingredients for Ziegler catalysis systems, says the trichloride will be priced at \$5-10/lb., depending on quantity, and the dichloride at \$15/lb.

The firm is not saying anything about its production method. But undoubtedly, its process for making the lower halides is an outgrowth of its work on titanium tetrachloride made via a moving-bed process from Sorel slag (*CW Technology Newsletter*, Aug. 11, '56). Stauffer, which also makes the lower halides, is cutting prices on its similar products (see *Market Newsletter*, p. 71).

•
Three new borane chemicals are available from Callery; dimethylamine-borane, trimethylamine-borane and pyridine-borane.

They're being suggested for use as selective reducing agents in nonaqueous solvents, polymerization catalysts, and inhibitors for acrylates and vinyls. Other antioxidant applications have shown promise, too. Other possibilities include: basis for making new motor fuel additives or, because of their toxic properties, as agents to control fungi, bacteria.

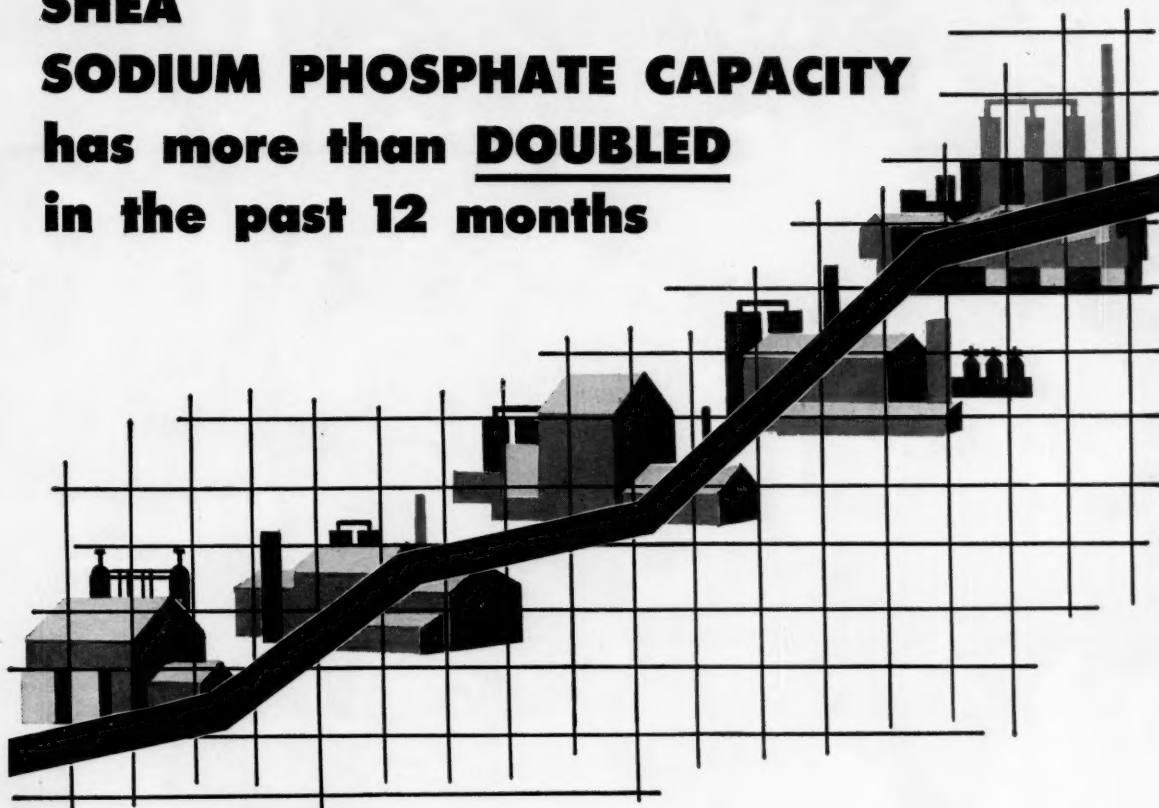
•
Powdered metallurgy techniques applied to aluminum should push back the thermal barrier for aluminum considerably. That's how Aluminum Co. of America views the significance of its introduction last week of aluminum powder metallurgy products (APMP). Here's why:

They're made from fine, unalloyed aluminum powder. But each flake of the powder is covered with a coating of aluminum oxide. The company says that when the powder is compacted and worked, the coating contributes strength and stability to the product at higher temperatures.

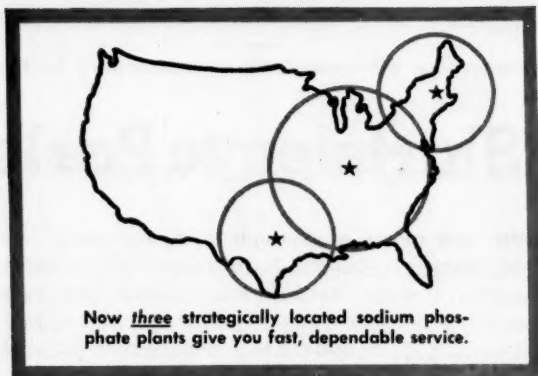
Certain products, Alcoa reports, can stand temperatures as high as 900 F—300-400 degrees higher than conventionally produced alloys. Products are now available in the form of extruded shapes, forgings, sheet, foil, drawn and extruded tube, impact extrusions, fasteners and wire.

•
Westinghouse's nuclear core manufacturing facilities at Cheswick, Pa., will be expanded. The expansion, second phase of the company's multimillion-dollar project in that field, will be housed in a new 24,000-sq.-ft. wing.

SHEA SODIUM PHOSPHATE CAPACITY has more than DOUBLED in the past 12 months



For a dependable source of SODIUM PHOSPHATES...count on SHEA



Every week, millions of pounds of Shea sodium phosphates are shipped to manufacturers of soap and detergent products — companies that demand products of undeviating quality, in unfailing supply.

This growing demand for Shea sodium phosphates is based on two important facts: customers *know* they can rely upon the *quality* of Shea products . . . and they *know* they can depend upon Shea *service*.

So can you.

Sodium Tripolyphosphate
Tetrasodium Pyrophosphate
Disodium Phosphate
Trisodium Phosphate
Sodium Hexametaphosphate
Phosphoric Acids, Food
and N. F. Grades
Phosphatic Feed Solutions
Organic Phosphorus Compounds
Elemental Phosphorus



CHEMICAL CORPORATION

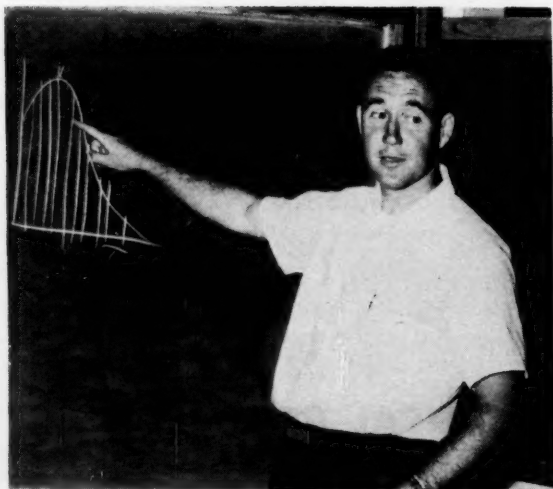
P. O. Box 326
Jeffersonville, Indiana
Phone: BUTler 2-1381

114 East 40th St.
New York 16, New York
Phone: OXford 7-4553

RESEARCH



GORDON RESEARCH CONFEREES: They gather once a year for off-the-record idea-swapping in their p



AEC'S BALLANTINE: Breeding plastic hybrids.

Shirtsleeve Parley

Bits and pieces of painstaking basic research are slowly bringing about the day of commercial radiation chemistry. Just what has been accomplished—and what remains to be done—was appraised recently in New Hampton, N.H., by 100 top radiation chemists gathered for the Gordon Research Conferences.* By tradition, discussions were “off the record.” But back home this week, conferees gave their expert opinions on the status and outlook of their field.

While individual appraisals vary widely on details, there is almost complete unanimity that (1) progress is being made; (2) barring someone's turning up a profitable radiation reaction by sheer chance, there's little likelihood one will come along in the next five years.

*Which cover 36 subjects (CW, March 24, '56, p. 91).



r p ular field. Shown: radiation chemists at New Hampton, N.H.

y Draws Crowd of Radiation Experts

Coming in for special mention is work by David Ballantine (*left*) and colleagues at Brookhaven National Laboratory (Upton, N.Y.) on graft polymers—plastic hybrids (e.g., polyethylene strengthened by acrylonitrile) having novel and potentially valuable physical properties.

In these studies, styrene, acrylonitrile, 4-vinylpyridine, vinylcarbazole and methyl methacrylate each have been grafted onto polyethylene film. Styrene has also been grafted to Teflon fluorocarbon film. Other polymer-monomer systems obtained include Teflon-acrylonitrile, Teflon-vinyl acetate, dimethylsilicone rubber-acrylonitrile, polypropylene-styrene, nylon-styrene, etc.

The graft copolymers are prepared by gamma-irradiation (from a cobalt-60 source) of the polymer in the

presence of a monomer. Polyethylene-styrene graft copolymers, for example, can be made by irradiating the film immersed in monomer; irradiating the film swollen with monomer; or irradiation of the dry film, followed by immersion in monomer. The first method is the fastest. Ballantine views the grafting process as rather complex, states that the most efficient grafting occurs when a highly radiation-susceptible polymer is irradiated in the presence of a monomer featuring a low rate of radiation-induced homopolymerization. He sees extensive research ahead in such areas as the radiation stability of polymers in solution, seeking the effect of polymer structure, radiation dose-rate, etc.

Ballantine is also interested in solid-state polymerization. (*CW*, Jan. 29, '55, p. 48), has polymerized acryl-

RESEARCH

amide, methacrylamide, methylene-bis-acrylamide, vinylcarbazole, vinyl stearate, acrylic acid, methacrylic acid, etc., in the solid state by gamma irradiation.

Broader Future: Polymerization, though, is only part of radiation chemistry's commercial future. Radiation-irradiated organic chemicals, some believe, might even arrive first. The Gordon conferees got fresh evidence of this from Argonne National Laboratory's (Lemont, Ill.) results of irradiating aqueous solutions of organic chemicals. Irradiated benzene, for example, formed dimers, trimers and other high-molecular-weight products that are still being identified. Already pinpointed: phenylcyclohexadiene.

A new British patent (770,594) to Hercules Powder Co. (Wilmington, Del.) supplies one possible answer to a major synthesis problem—the need for low-cost radiation. The patent covers a process of producing organic compounds by “intimately contacting” fissionable material with at least one organic precursor, then “causing the fissionable material to fission.”

Hercules cites natural uranium (as a dispersion of UO_2 having a particle size of less than three microns in diameter) as a suitable fissionable material. Methanol and uranium, placed in a quartz tube and exposed to neutron bombardment, reportedly form ethylene glycol and formaldehyde. Acetic acid, similarly treated, then esterified with methanol, forms methyl succinate. Ethanol and hexane yield a mixture of butanediols, octanols and dodecanes; acetonitrile produces succinonitrile, and so on.

Hercules says the “fragmentation of organic molecules by exposure to fission fragments from the fissioning of atomic nuclei with the subsequent dimerization or combination of the organic molecular fragments so produced will occur with alcohols, ethers, esters, ketones, carboxylic acids, carboxylic acid anhydrides, the sulfur analogs of any of these compounds, nitriles, amines, amides, hydrocarbons, halogenated hydrocarbons, organic phosphorus compounds, and a wide variety of other organic compounds.”

Hercules says its new process may also be applied to reactions between two or more different organic compounds. This way, methanol produces heptanols when it is reacted with hexane; octanols when reacted with hep-

tane; nonanols with octane. A mixture of hydrocarbons reacts with methanol or another alcohol to produce a mixture of high-molecular-weight alcohols. Heptane and acetic acid yield mixed caprylic acids. The possible combinations are almost endless.

‘Window Dressing’? Despite such signs of a burgeoning chemical-radiation research effort, some Gordon conferees think not nearly enough is being done—even hint darkly that industrial radiation research facilities are sometimes “window dressing.” Others say it's true that laboratory successes are usually a long way from having commercial import, but that

it's hard to discount the sincerity of the researchers.

When Standard Oil of New Jersey President M. J. Rathbone told his company's shareholders earlier this year that gamma radiation at Esso Research & Engineering Co. had “actually produced gasoline from heavier oil stocks and from refinery gases,” he was quick to add that the work was still in a very small-scale, laboratory stage. Rathbone's argument: “No one can predict now, but . . . conventional methods of refining . . . may be replaced.”

Other industries, too, anticipate a transformation. Already, the U. S.



Probing Radiation Damage

While some researchers seek to harness radiation (see p. 64), others, such as these Battelle Memorial Institute (Columbus, O.) technologists, are trying to learn more about radiation damage. Under an Air Force contract, Battelle is exposing semiconductors in its 1-million-watt reactor (above) to find which

type will withstand radiation best, lend itself to use in the electronic systems of nuclear aircraft, and other nuclear devices.

Some of the semiconductors to be studied are aluminum antimonide, gallium arsenide, indium phosphide, cadmium sulfide and cadmium telluride.



Keep the white lines bright with TITANOX*

Traffic paints must have four basic qualities: visibility, durability, fast drying, and applicability. You'll find TITANOX titanium dioxide white pigments ideally take care of the first two.

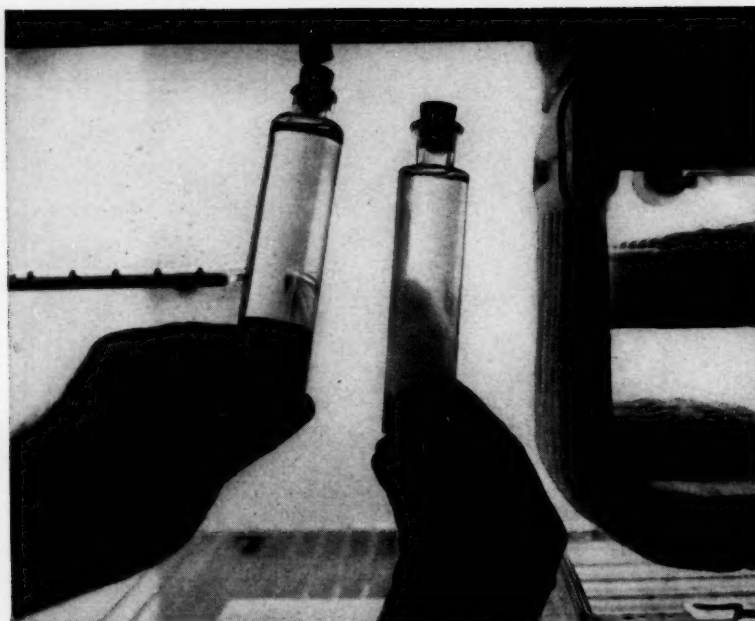
The coalesced rutile-calcium pigments TITANOX-RCHT and TITANOX-C-50 are logical choices for prime pigment in white traffic paints, providing

lasting visibility plus durability. They're the best choice for reducing costs without sacrificing quality. In fact, TITANOX is the number one choice in titanium dioxide pigments for *anything* that needs white pigment—paper, rubber and plastics, paints, or ceramics. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y. Offices in principal cities.

TITANIUM PIGMENT CORPORATION
Subsidiary of NATIONAL LEAD COMPANY

*TITANOX is a registered trade mark for the full line of titanium pigments offered by Titanium Pigment Corporation.

5214-A



Superiority of GROCO 2 RED OIL revealed in unretouched photograph of low temperature test. Samples of GROCO 2 (left) and competitive red oil (right) were refrigerated at 36°F. for 24 hours side by side. No solids separated out of GROCO 2 RED OIL—it remained so transparent that technician's fingers and steel tray are clearly visible through vial. On right, solid acids separated in large amount.

Titre Is Lowest In GROCO 2 Red Oil

GROCO 2 RED OIL's exceptionally low content of saturated fatty acids—titre 3°C.—is advantage enough in itself to make it top choice for many processors. More than one producer of a liquid shampoo, for example, prefers GROCO 2 because it gives a formulation that stays liquid at low temperatures.

Equally outstanding is its oxidation stability. In the Mackey Test, GROCO 2 remained under 105°C. for 5 hours. There are no oxidation discoloration problems when you formulate with GROCO 2. And there is an absolute minimum of unusable components, making GROCO 2 the best money value of any red oil in its class.

You consistently enjoy an edge in storage, handling, processing and consumer acceptance when you "Always specify A. Gross"—whether your end products are soap, cosmetics, plastics, paints, polishes or emulsifiers.



295 Madison Ave., N. Y. 17, N. Y. • Factory: Newark, N. J.
Distributors in principal cities • Manufacturers since 1837

Please send me, without obligation:

- ☐ Samples of A. GROSS distilled red oil
☐ A. GROSS booklet, "Fatty Acids in Modern Industry"

I want to evaluate this sample for use in _____

Name _____ Title _____

Company _____

Street _____

City _____ Zone _____ State _____

RESEARCH

Dept. of Agriculture is looking for new products from pine gum, tung oil, etc., via radiation; metal catalyst makers are probing irradiation's power to improve catalyst activity; and scores of other equally dissimilar commercial products have found a common denominator in radiation research.

So far, it's true that irradiated polyethylene (*CW*, April 3, '54, p. 69) is the only marketed product the chemical process industries have to show for their radiation research.

Why researchers are not making more rapid progress toward commercial radiation chemistry is a moot issue. But it's clear that radiation chemistry is a lot more complicated than anyone first believed it to be. Only now are its inherent problems coming to light. In normal reactions, for example, process mechanisms are easily predicted by examination of end-products. Not so with radiation reactions. Once thought to be governed by free-radical mechanisms, they're now known to involve something else—what, nobody knows.

A West Coast expert thinks the chief obstacle to commercial radiation-induced reactions is "the low-energy content, very dilute nature" of proposed systems. His hope: a chain reaction or special treatment to make reactants more vulnerable to radiation. A few other conferees (all professors) think they have spotted "break-through" reactions in recently published literature.

Even if feasible reactions are discovered, there's still the problem of radiation costs—they must come down to make wide-scale utilization feasible. One view is that radiation is a direct competitor with heat in chemical processing: "If you bombard a molecule, you get the same result as you do by heating it up—the split comes at the same, weakest point." In general, though, radiation is not expected to replace heat in chemical plants. It is more commonly regarded as a new form of energy to be used in the production of materials that can be made only with radiation. To develop the potential of this new technology, it will be necessary, most researchers agree, to look at all—not just the easily observed—effects of radiation. Early radiation experiments, one seasoned investigator says, were cases of "observing the molehill instead of the mountain."

SULPHUR

helps to

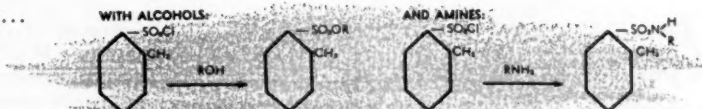
create

HEADLINE

products

o-TOLUENESULFONYL CHLORIDE*

TYPICAL REACTIONS . . .



Industry has a new working tool in o-Toluenesulfonyl Chloride. This 98% pure ortho isomer can be used in building molecules for use in a wide variety of new products, from dyestuffs to pharmaceuticals; from plasticizers to herbicides. It is even possible that it is now being used in products you are making or have recently acquired.

From the chemical name of o-Toluenesulfonyl Chloride it is obvious that sulphur is a component of this compound . . . added evidence of the important role Sulphur plays in our industrial economy.

**Product of Monsanto Chemical Company*



Texas Gulf Sulphur Co.

75 East 45th Street, New York 17, N. Y.
811 Rusk Avenue, Houston 2, Texas

Sulphur Producing Units

- Newgulf, Texas
- Moss Bluff, Texas
- Spindletop, Texas
- Worland, Wyoming

Announcing . . .

JEFFERSON'S

Alkali Sales Division

and its products:

CAUSTIC SODA

SODA ASH

SODIUM BICARBONATE

CAUSTIC POTASH

*A New Direction for
Jefferson Sales*

Jefferson has produced petrochemicals in increasing number and quantity since 1948. Now Jefferson initiates sales and service on an important group of inorganic chemicals

*A New Alkali
Product Group*

Jefferson has assumed responsibility for sales and service on the caustic soda, soda ash, sodium bicarbonate, and caustic potash formerly marketed by American Cyanamid Company. The new Alkali Sales Division will also handle caustic soda from Jefferson's new caustic-chlorine plant at Port Neches, Texas, scheduled for completion in 1958.

*New Division Has
an Experienced
Sales Force*

The Cyanamid personnel who have handled these alkalis have transferred to Jefferson's New York office at 260 Madison Avenue. They bring to Jefferson their considerable experience in the marketing of heavy chemicals. The Alkali Sales Division will be headed by William F. Phillips, formerly of Cyanamid.

We at Jefferson . . . are pleased to broaden our association with the chemical and related industries, and look forward to providing the same high quality of service on alkalis that has been identified with our name on organic chemicals.

Essential Chemicals from Hydrocarbon Sources

Jefferson
CHEMICAL COMPANY, INC.



Ethylene Oxide,
Glycols, Dichloride
Ethanalamines
Morpholine
Piperazine
Polyethylene Glycols
Nonyl Phenol
Surfonic® Surface-Active
Agents
Ethylene Carbonate and
Propylene Carbonate
Caustic Soda
Soda Ash
Sodium Bicarbonate
Caustic Potash

HOUSTON • NEW YORK • CHICAGO • CLEVELAND • CHARLOTTE • LOS ANGELES

Market Newsletter

CHEMICAL WEEK
August 3, 1957

Treasury Dept. investigations of "dumping" of foreign goods on U.S. markets should be given wider publicity. That, in essence, is what the New York Board of Trade asked of the House Ways & Means Committee late last week. In addition, the board would like to see "greater clarification" of terms (e.g., "injury", "industry") in pending tariff legislation slated for hearings this week before the House committee in Washington.

M. D. Griffith, executive vice-president of the Board of Trade, who made these comments in New York, also said that both the board's Textile & Drug and Chemical & Allied Trades sections had recommended further amendments to the new legislation that are "needed to protect their industries from distress goods dumped on the American market."

As for the clarification of words, Griffith flatly stated that the interpretations by administrative agencies of the words "industry" and "injury" had varied so widely in the past that "serious financial damage had been suffered by various segments" of the American industry.

Reported slashing of prices on titanium trichloride (by Stauffer) may well be a move aimed at building up a market for the material that's expected to become an important catalyst in the production of polyolefins. New tag: \$3.50/lb. in 30,000-lb. lots.

Although the low price comes as a surprise to the trade—the trichloride was selling at about \$90/lb. in lab quantities not long ago—the carload amounts being offered by the company are even more unexpected. Stauffer's trichloride operations at Richmond, Calif., are only pilot-plant size, but the new schedules would indicate that output has been stepped up to near-commercial levels.

Canada's petroleum industry has taken another step toward self-sufficiency; a new \$6-million plant is now in full operation, turning out a synthetic fluid cracking catalyst. The installation, at Valleyfield, near Montreal, is operated by Davison Chemical Co. Ltd., an affiliate of the W. R. Grace division. Until now Canadian refineries have been entirely dependent upon U.S. sources of supply for the catalyst.

No capacity figures are available on the Valleyfield plant, but production is said to be "scaled to provide for Canadian requirements in the foreseeable future."

Raw materials for production of the catalyst (sodium silicate solution, sulfuric acid, anhydrous ammonia, and alumina hydrate) will all be of Canadian origin. A silicate solution plant, for instance, has been built adjacent to the catalyst facilities by National Silicates Ltd. (New Toronto), and supply of the material is through pipeline.

Market Newsletter

(Continued)

Acetate film users have just been handed a 5¢/lb. increase. The hike is being posted by Du Pont, goes into effect immediately.

Why the advance? In a letter to customers, J. Edward Dean, director of sales of the company's film department, noted that since '50 raw material prices "have increased 7% and wage rates in acetate film manufacturing have risen 53%." During the same period, he added, prices of acetate film (including the latest advance) have risen 9%.

Skittering demand has pressured DDT prices downward. At least one major producer has lopped 2¼¢/lb. off his insecticide schedules. Flake and lump DDT now lists at these same prices: c. l. bag quantities, 20¢/lb.; l.c.l., 22¢. Packed in fiber drums, the material is 1¢/lb. higher at 21¢ (c.l.); l.c.l., 23¢/lb.

Prices of powdered DDT are uniformly ¾¢/lb. above the flake and lump schedules.

Aluminum prices, though, may go higher this week. And the persistent trade talk concerning the more than likely impending advance also notes an intraindustry controversy on the advisability of such action at this time. Some maintain that the current softening demand for the light metal should preclude a new hike; others cite the same reason as justification for such a move, claim producers alone can't absorb spiraling manufacturing costs.

The increase would probably nudge aluminum pig tags up about 1¢/lb., establish a 26¢/lb. level effective Aug. 1. It's not merely coincidental that that's the day a 7% industry-wide boost, part of the three-year labor pact signed last year (*CW Market Newsletter*, Aug. 18), also goes into effect.

More domestic niacin is ready to hit the market. Last week, Koppers dedicated its new vitamin B complex producing and development plant at Arroyo, W. Va.

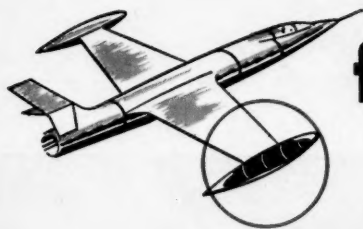
The firm will turn out two grades of niacin—a feed grade for use with animal feeds, and another grade for human consumption. There's no official data on capacity of the installation, but estimates range around 500,000 lbs./year.

SELECTED PRICE CHANGES—Week Ending July 29, 1957

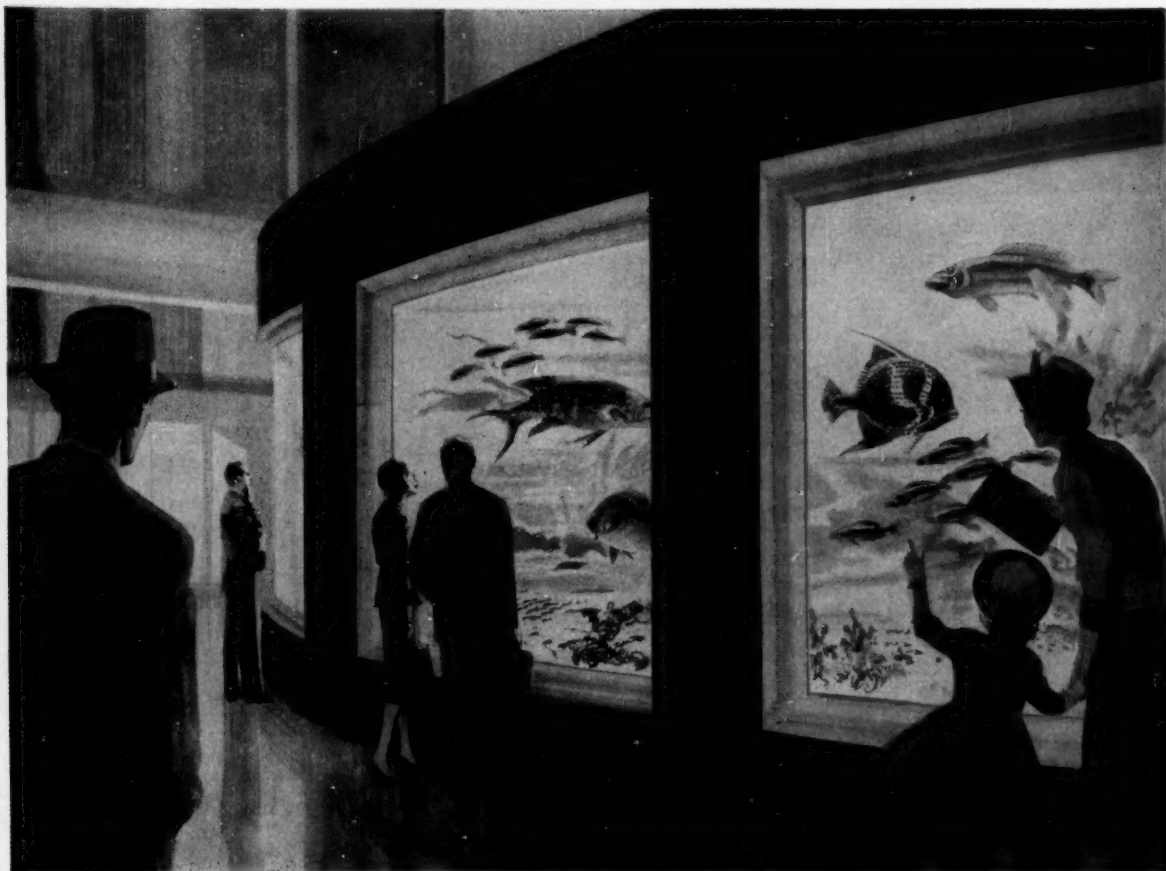
DOWN

	Change	New Price
DDT, flake or lump, bgs., c.l., wks., frt. equald.	\$0.0225	\$0.20
Ouricury wax, pure, rfd.	0.03	0.75
Platinum, metal, wks., per oz.	1.00	87.00

All prices per pound unless quantity is stated.



from **FUEL TANKS** to **FISH TANKS**



THIOKOL liquid polymers enable leakproof sealants with outstanding solvent and chemical resistance

From the first practical aviation wing tanks installed a quarter of a century ago in the China Clipper, to present-day sealants for jet aircraft, THIOKOL liquid polymers have made possible new elastomeric type sealants. These sealants withstand extreme vibration and thermal stress, and are resistant to solvents and modern fuels.

Today, modern sealants based on THIOKOL liquid polymers not only are outstanding in the aircraft industry, but are widely used in a number of other industries. A recent example is their use in water-tight sealing of glass-to-metal, metal-to-concrete joints of the huge tanks in the New York Aquarium. Because of their adhesion to multi-materials, and their ability to expand and con-

tract to meet the stress of modern-day curtain wall structures, sealants based on THIOKOL liquid polymers are widely used in the building industry.

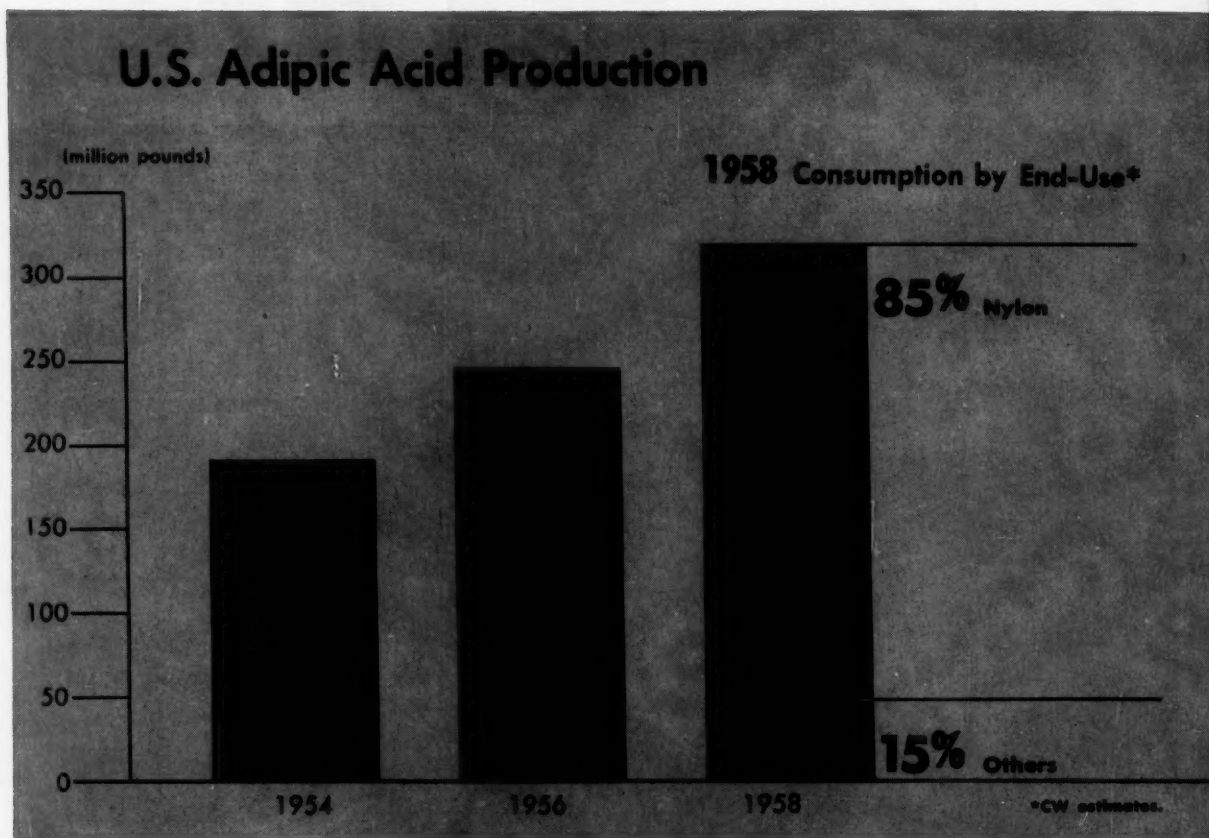
For additional information, see Sweet's 1957 Catalog or write: Thiokol Chemical Corporation, 780 North Clinton Avenue, Trenton 7, N. J.; in Canada, Naugatuck Chemicals Division, Dominion Rubber Co., Elmira, Ontario.

The new New York Aquarium tanks are sealed with DEL, an elastomeric sealant based on THIOKOL liquid polymers and compounded by David E. Long Corporation, New York.

Thiokol
CHEMICAL CORPORATION

Registered Trademark of the Thiokol Chemical Corp. for its liquid polymers, rocket propellants, plasticizers and other chemical products.

MARKETS



Adipic Edifice: Nylon Foundation With a

Imminent expansions by three of the country's four major producers will jack total U. S. adipic acid capacity to some 350 million lbs./year by the end of 1957—and that's a good 23% above last year's capacity. Even more significant: the new increases may well be strained, within the foreseeable future, to fulfill growing demand.

Here's where the new production potential will come from:

- Du Pont's multimillion-dollar expansion at its Belle, W. Va., plant is expected to be in operation this year, will increase present capacity there by about 75%.
- Monsanto's spanking new Luling, La., plant is due onstream any day now. The company is mum about capacity, but it's a safe bet that the increase is a sizable one.
- Chemstrand's unobtrusive expansion, under way at its Pensacola, Fla., installation will be ready to roll late in '57.

Switch in Processes: Du Pont, by far the largest producer of adipic (four sizable plants), is sparking additional interest with its expansion at Belle. Reason: the installation utilizes a new process.

Cyclohexane has been the basic adipic acid raw material, since changing economic conditions have almost forced benzene (dominant raw material in the late '40s) out of the domestic picture. Although details of Du Pont's process are unavailable, it's known that the new method combines air oxidation and nitric acid oxidation of cyclohexane.

National Aniline, comparative newcomer in the field, uses the classic hydrogenation of phenol to cyclohexanol, subsequent oxidation. Monsanto is chary about discussing production methods, but chances are that it is also using oxidation of cyclohexane, involving nitric acid.

Nylon Trail-Blazer: Regardless of what method is used, though, total U. S. production of adipic acid is soaring. Last year, output was pegged at about 245

Production of Adipate Plasticizers

(million pounds)

	1950	'51	'52	'53	'54	'55	'56
decyl adipate	n.a.	n.a.	n.a.	n.a.	n.a.	1.5	1.2
(2-ethylhexyl) adipate	2.0	1.1	3.2	3.5	2.7	2.6	1.1
di-iso-octyl adipate	1.2	2.4	1.1	1.5	0.9	1.6	2.2
others	2.8	3.6	3.0	4.2	3.4	4.9	4.0
Total	6.0	7.1	7.3	9.2	7.0	10.6	8.5

croachment nylon has been making into the tire-cord market. From '53 to '57, nylon-cord output jumped more than 200%. Nylon consumption for tire cord is at least 65 million lbs./year. Meanwhile, rayon tire-cord output, while it still holds the bulk of the market, dropped 10% last year.

The strong possibility that nylon-cord tires will soon be used as original equipment on new cars strongly brightens the outlook for nylon in the automotive field. And such increased nylon demand means a coattail ride for adipic.

Adipates Act Up: Production of adipates for plasticizers takes an impressive 10-20% bite out of total adipic acid consumption. Although adipates represent a small facet of the total plasticizer picture (8.5 million lbs. out of 416.7 million lbs. in '56), the variety of adipates consumed has been widening over the years. Today, there are at least 12 adipates commercially available, although the Tariff Commission reports only three by name.

Recently released government figures, however, show that production of adipate plasticizers has dropped about 20% between the peak of '55 (10.6 million lbs.) and '56's 8.5 million lbs. (see table, left). This, however, doesn't appear to daunt adipates producers, who point out that the over-all trend for their products is bullish. Estimates are that by 1960 adipate plasticizers should nudge the 13-million-lbs./year mark.

Production of di(2-ethylhexyl) adipate and di-iso-octyl adipate—specialty plasticizers used to impart low-temperature flexibility to vinyl and many rubber compounds—has fluctuated from year to year; but the varying output merely reflects the demand for the products they go into. "The fact that these adipates have been holding their own in a highly competitive field, signifies something," insists one producer.

Didecyl adipate, first reported separately by the Tariff Commission in '55, is apparently just about holding its own. Although '56 production of 1.2 million lbs. is a drop-off from '55's 1.5 million lbs., the amounts represent 14% of total adipate output for each year.

Di-iso-octyl adipate, a competitor of didecyl in many end-uses, not only shows a growth in output—2.2 million lbs. in '56, compared with 1.6 million lbs. in '55—but also takes a larger share of total adipate production. Last year, it accounted for 25% of the adipate market; in '55, it was only 14%. This is contrary to some market observers' dire predictions a few years ago that di-iso-octyl adipate output would suffer from didecyl adipate competition.

Urethane Shakeup: Urethane foams consume only 3% of the total available adipic acid. But producers of adipic once looked to urethane foams as a healthy potential market for the acid. Explaining their once-fond hopes are these data: production of flexible ure-

a Diverse Superstructure

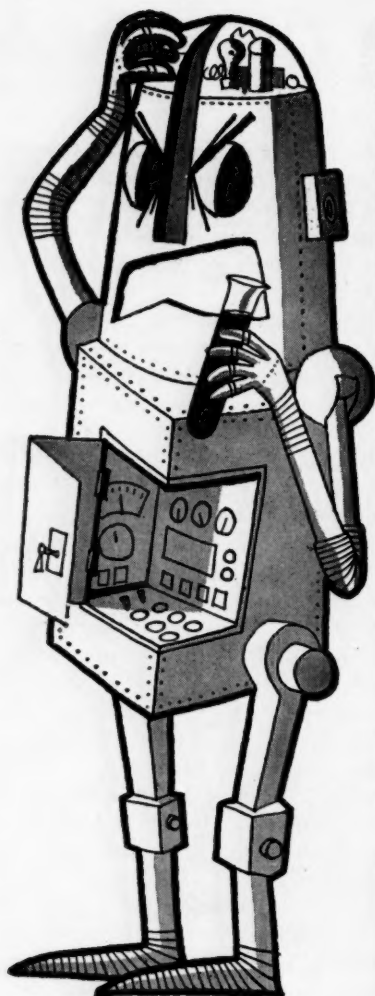
million lbs. By '58, with newer installations in operation, production could hit some 320 million lbs.

And most of that may well be needed to keep pace with nylon growth. Production of adipic usually copies the pattern of nylon output. Between 85-87% of the acid is consumed in nylon manufacture, expanding at a brisk pace.

By the end of next year, nylon production will have hit the 300-million-lbs. mark, up from 100 million lbs. in '50 and 25 million lbs. in '45.

Next year, Chemstrand's nylon plant in Pensacola will be upped to a capacity level of 114 million lbs. a year. In '58, too, Du Pont is expected to complete its new 40-million-lbs./year nylon filament plant at Richmond, Va. And American Enka Corp. is planning a 75% increase in production of nylon at its Enka, N. C., plant. These new units will bring total U. S. nylon capacity to a record high of 410 million lbs./year.

Few market analysts expect the surge in nylon consumption to falter. This view is bolstered by the en-



Cure for Waste "Indigestion" ... Jacques Wolf Enzymes

Jacques Wolf specific action enzymes insure rapid and complete liquefaction of waste materials. They get right to work and stay on the job until wastes are liquefied and drained off. Yes, Jacques Wolf enzymes actually "digest" wastes and flow them away!

Ideal for septic tanks, cesspools and sewers, they're highly concentrated to do a better, more effective job in less time.

Samples for testing are available; contact us today.

JACQUES WOLF & CO.
Chemicals PASSAIC, N.J.

Plants in: Clifton, N.J., Carlstadt, N.J., Los Angeles, Calif.



MARKETS

thane is expected to total 30-35 million lbs. this year, while '55's output is estimated at about 10 million lbs. Rigid-urethane foam output is expected to go as high as 20 million lbs. this year, compared with nearly 3 million lbs. in '55.

Forecasts indicate that by 1960 flexible-foam production will exceed 100 million lbs. and rigid-foam output may even top 50 million lbs. Such estimates understandably sounded sweet to adipic acid producers. But a few discordant notes have recently crept in.

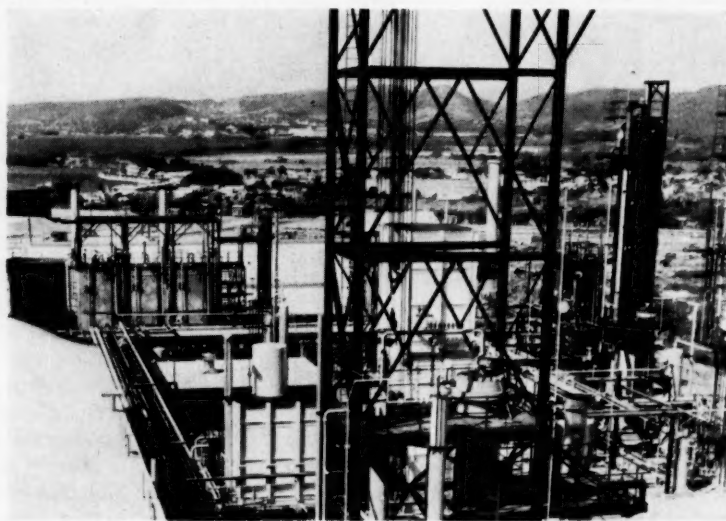
One is the recent development of a polyether-based urethane foam that may knock the props from under those foams using a polyester base. Polyether foams, which utilize propylene glycol as a raw material, are less costly than polyesters, which are based on adipic.

The recent news that General Tire

& Rubber Co. is discontinuing production of all polyester-based urethanes, concentrating on the polyethers (*CW Market Newsletter*, July 20), isn't making adipic makers any happier. They point out, however, that the switch from polyesters to polyether foams will affect only the flexible foam market; rigid-urethane foams are still closely tied to polyesters, and to adipic acid.

The market for rigid foams currently represents only about 25% of the total urethane foam market.

In all, it's quite apparent that adipic acid producers must still depend on nylon for the biggest adipic sales boost. But since nylon demand gives little indication of slackening, the adipic outlook seems bright indeed. If the need for adipic in other outlets should also grow, it will be so much extra icing for producers.

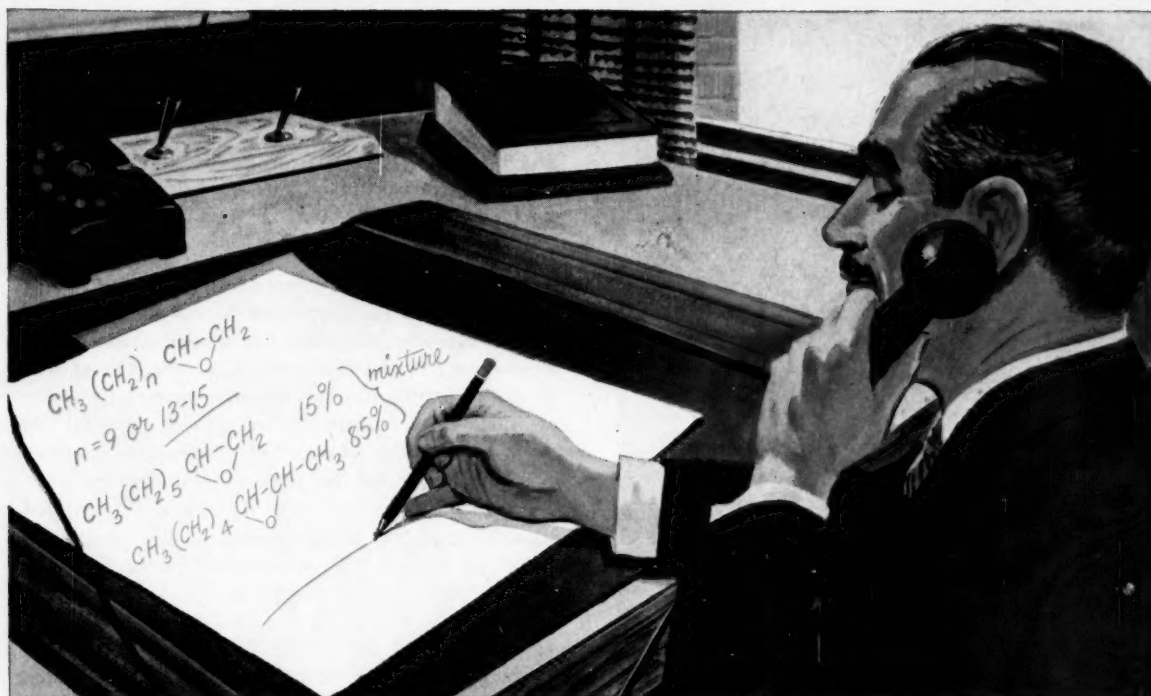


Boosting Puerto Rico Chemicals

The chemical boom in Puerto Rico continues. During the fiscal year ending July '57, 17 new U.S.-based chemical and allied plants (including eight plastic molders and two pharmaceutical firms) started operations. Total now: 45, since 1950. Today, there are 171 manufacturers in Puerto Rico with U.S. connections. Electronics, textiles and metal-making head the list; chemicals and related products comprise 10% of the total. One of the newcomers: the new \$12-mil-

lion Gonzales Chemical Industries fertilizer plant (above), which has launched full-scale operations.

Another indication of increased chemical expansion in the Commonwealth: Union Carbide's recent contracting with Economic Development Administration to build a \$28-million ethylene glycol plant on the island. Says EDA: "We believe that this is just the beginning of a petrochemical industry that, by 1965, should represent a \$1-billion investment."



Where can you use Olefin Epoxides, now available in development quantities?

Perhaps we can offer a few suggestions. New Olefin Epoxides now available in development quantities from Becco are showing great promise in applications, such as:

1. general solvents
2. solvents and reactive diluents for epoxy resins
3. intermediates in manufacture of: perfumeries, cosmetics, surfactants, plastics, lubricants
4. acid scavengers
5. corrosion inhibitors
6. stabilizers for chlorinated compounds
7. monomers
8. organic synthesis intermediates

These epoxidized Olefins, developed by Becco as a result of extensive research in epoxidation reactions, combine variable length hydrocarbon structures with reactive epoxy groups and undergo reactions such as polymerization, isomerization, reduction and ring-opening with a variety of active hydrogen compounds.

The compounds offered are high assay epoxides:

	F.P. °C	B.P. °C	Density at 25°C	Solubility
OCTYLENE OXIDE mixed 1,2-and 2,3-epoxy-n-octanes	< -50	76-78 (45mm)	0.830	very slightly soluble in water, soluble in hydrocarbons and other organic solvents.
DODECENE OXIDE 1,2-epoxy-n-dodecane	ca -10	97-98 (3.5mm)	0.836	insoluble in water, soluble in hydrocarbons and other organic solvents.
C ₁₆ -C ₁₈ OLEFIN OXIDE mixed 1,2-epoxy-n-hexadecane and -n-octadecane	ca 15	>110 (0.5mm)	0.842	insoluble in water, soluble in hydrocarbons and other organic solvents.

If you are interested in possible applications of these epoxy compounds, we shall be glad to supply experimental quantities and technical assistance. Why not begin by writing for your free copies of Bulletins 72, 73, and 74 — there is no obligation.

BECCO CHEMICAL DIVISION

Food Machinery and Chemical Corporation
Station B, Buffalo 7, New York

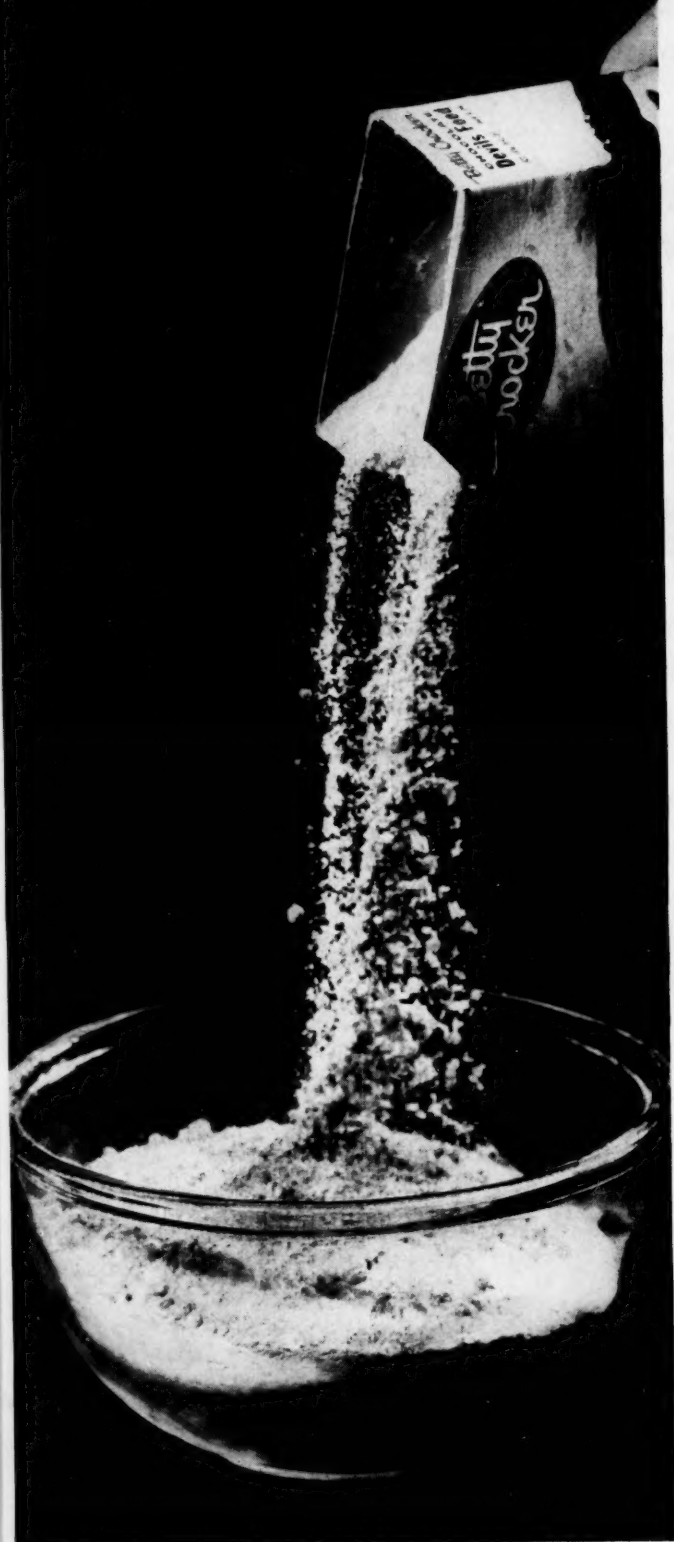
BUFFALO • BOSTON • CHARLOTTE, N.C. • CHICAGO
NEW YORK • PHILADELPHIA • VANCOUVER, WASH.

Progress in Peroxygens

BECCO



FMC CHEMICALS INCLUDE: BECCO Peroxygen Chemicals • WESTVACO Phosphates, Barium and Magnesium Chemicals • WESTVACO Alkalis, Chlorinated Chemicals and Carbon Bisulfide • NIAGARA Insecticides, Fungicides and Industrial Sulphur • OHIO-APEX Plasticizers and Chemicals • FAIRFIELD Pesticide Compounds and Organic Chemicals



Ready Mixes Sweeten Dry-Flavored Sales

Already prime contributors to the success of cake and pudding mixes, spray-dried flavors are key ingredients of the new powdered, carbonated drink concentrates—e.g., Fizzies (CW, July 1, p. 58). Taking stock of their opportunities in this new market, producers of spray-dried flavors* were openly pleased this week. In the words of one, "The potential is enormous . . . both for us and the powdered-pop makers."

Bright prospects have been the rule in this burgeoning corner of the flavor business. Since their debut within the past decade, spray-dried flavors have been steadily increasing in sales. They are now estimated to have at least 5% of the \$60-million flavors and perfumes market.

Good Mixer: Prepared cake mixes take the major portions of the flavor powders. They are going into an increasing percentage of these packaged mixes, usually at a rate of 4-oz. of dry flavor per 100 lbs. of cake mix. Booming now, the mixes are selling at a 600-million-packages/year pace (up from 33 million in '47, 360 million in '54). And their future looks good, too. Predictions are for another 20% growth in sales in the next few years.

Powdered soft drinks, of which the carbonated type is a growing part, today is a \$30-million/year consumer field. The business not only is growing steadily but also offers this added soupcon of pleasure to the flavor maker: the soft drinks use three times as much of his product per 100 lbs. of formulation as do the cake mixes.

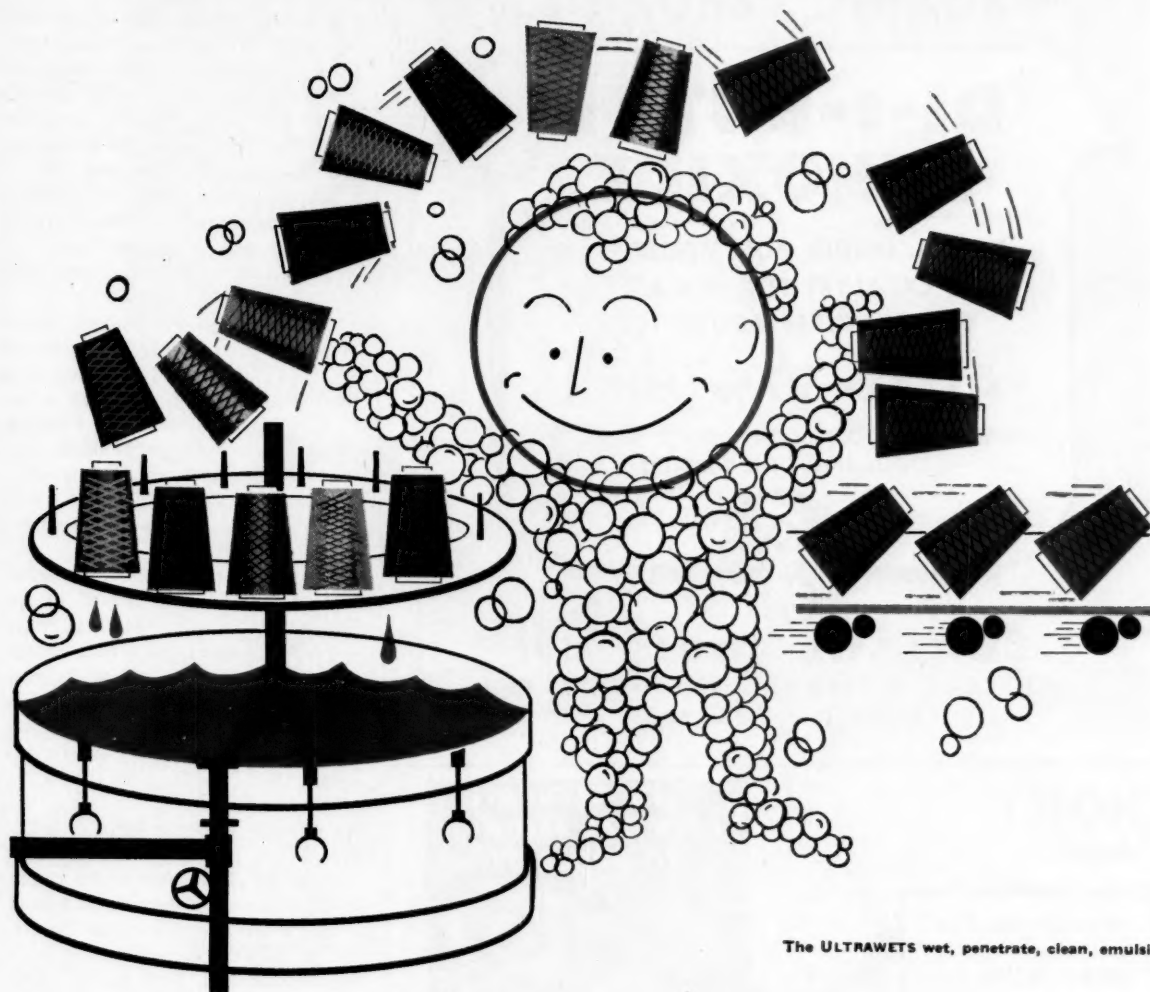
Adding to flavor producers' optimism over the future of the carbonated powder drinks are recent advances in formulating the latter. Says one flavor spokesman, "We see one of these powdered drinks come out every year, but they can't seem to hit just the right formulation. You either get the fizz without the flavor, or the flavor without the fizz. But I think they're getting pretty close to the right thing now."

Good Medicine: Dry-flavor manufacturers also look for increased use of their flavors in pharmaceuticals. The dry products allow the drugmaker to incorporate flavor into powder medications without heating—important with heat-sensitive vitamins and similar materials. Powder-flavor makers also point out that liquid flavors sometimes react with the medicine. Because of their inert vegetable gum coating, this is a complication that seldom arises with the dries.

*Vanillin and ethyl vanillin have been sold in dry form for many years.

Cake mixes take the bulk of dry food flavors.

REDUCE COSTLY DYEING DELAYS



The ULTRAWETS wet, penetrate, clean, emulsify

ULTRAWET 60L

Figure out how much time you lose on dyeing jobs that have to be done over, and you have the best possible reason for using ULTRAWET 60L.

The addition of small percentages of ULTRAWET 60L to the dye bath greatly improves leveling action and dye penetration—especially on direct dyes for cotton and viscose rayon. This superior Atlantic dye assistant speeds wetting of minute dye particles, holds them in suspension, assures uniform leveling. ULTRAWET 60L has been proved effective in concentrations as low as .05% to .01% by weight of solution.

Give yourself the benefit of this greater promise of uniform dyeing on first runs. Get full details on ULTRAWET 60L. Just write, wire or phone The Atlantic Refining Company, Dept. H-8 at the nearest office listed.



Philadelphia, Providence, Charlotte, Chicago

In the West: L. H. Butcher Co.

In Canada: Naugatuck Chemicals Division
of Dominion Rubber Company, Ltd.

In Europe: Atlantic Chemicals SAB,
Antwerp, Belgium

In South America: Atlantic Refining
Company of Brazil, Rio de Janeiro

ORGANIC PEROXIDES

DI-t-BUTYL PEROXIDE

STABLE, LIQUID POLYMERIZATION
CATALYST FOR USE AT
TEMPERATURES ABOVE 100°C

ASSAY-97% (MIN.)

WAREHOUSE STOCKS CONVENIENTLY LOCATED
THROUGHOUT THE COUNTRY



LUCIDOL DIVISION
WALLACE & TIERNAN INCORPORATED
BUFFALO 5, NEW YORK

"NOSEY"
says:

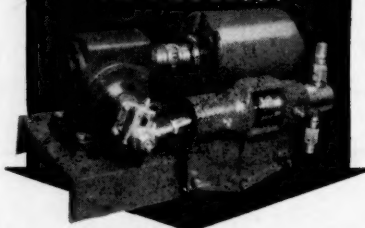
I'M CONVINCED, the best bad-odor eliminator yet to be developed is versatile, low cost, ever-so-widely used NEUTROLEUM. This exclusive FRITZSCHE deodorizing specialty has been employed successfully to mask unpleasant odors for more totally different products than you'd imagine possible. Waxes, textiles, fuel oil, polishes, rubber, printing ink, paints, plastics, adhesives, fertilizers... these are but a few of the products that have been benefited by its use. So my advice is, if you've got any odor problem, ask about and sample NEUTROLEUM first!

*Reg. Trade Mark

FRITZSCHE
Brothers, Inc.
PORT AUTHORITY BUILDING
76 NINTH AVENUE, NEW YORK 11, N. Y.

Established
1871

NEED ACCURATE CHEMICAL FEEDING TO PROCESS?



Check into this small, efficient, proportioning pump by **PROPORTIONEERS!**

For greater accuracy, greater range, feed all chemicals (alkaline, neutral, or acid) with this Model 1106 Proportioneer. Pay less, get more... interchangeable measuring cylinders, super-accurate Vane-Guide check valves, percentage calibrated stroke-length scale, etc.

- Accuracy — within $\pm 1\%$
- Adjustment range — 15 to 1
- Capacities — from 0.11 to 35.6 GPH
- For discharge pressures up to 1100 psig.

Request Bulletin 1106-2 for complete data.

Proportioneers, Inc.
406 Harris Ave., Providence 1, R. I.

PROPORTIONEERS, INC.
DIVISION OF
B-I-F INDUSTRIES
METERS • FEEDERS • CONTROLS

SPECIALTIES

Dry flavors are also said to have potential in the confectionery field. Some producers say that cream centers taste better when made with the dries. Few flavor men, however, believe the dries can dislodge the liquids, which are doing a satisfactory job.

Dry flavors also find a substantial use in gelatins, pudding powders, milk powders, and powdered icings—all convenience foods with expanding markets.

Tasteful Imports: Nobody seems sure just how or where the idea of spraying dried flavors started, but most suppliers agree the idea is not of U.S. origin. Some credit England, some Germany, some Holland. One flavor salesman says England exported a lot of dry flavors before the war, but "they were so bad they gave the industry a poor start."

Actually there's not too much difference between the spray-dried flavors and the liquid concentrates, either in price (dry flavors run a little higher) or in the amount needed to flavor a product. Some proponents claim longer shelf-life for the dries (due to less oxidation), but sellers of the liquids dispute this.

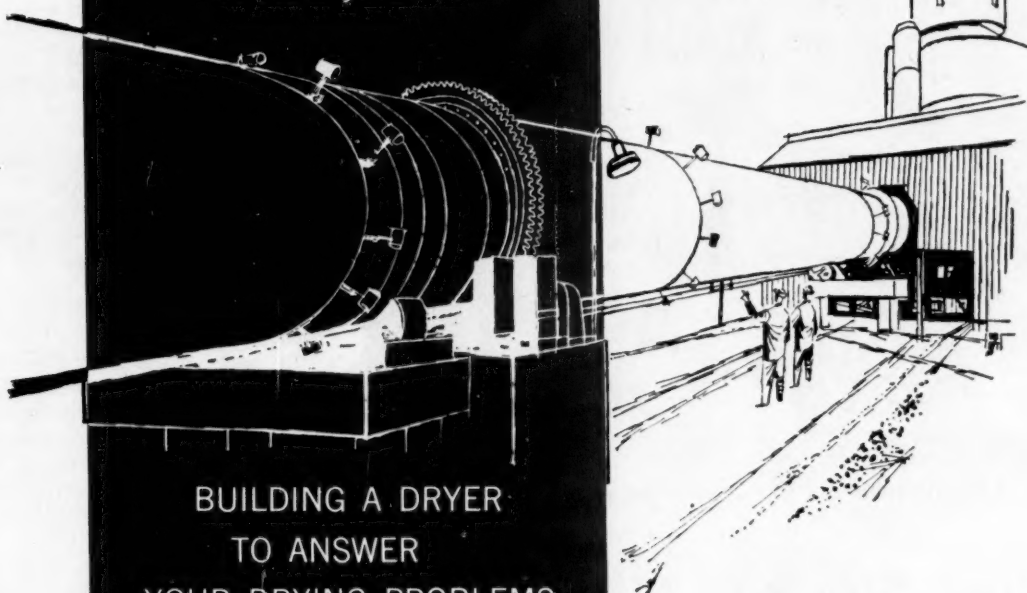
One less-debatable advantage of the dry products is the saving of a drying step by the food processor. And also cited in the dries' favor is the saving in shipping costs. Where liquid flavors usually move in stainless steel drums, the dry material is simply shipped in polyethylene-lined fibre drums. And loss due to evaporation in storage and transit is said to be lower in the case of the powders.

Tower Process: Almost all the flavor companies now favor spray-drying over other methods of making powder. Some balked at the initial cost of spray-drying equipment (a good-sized spray tower can run over \$100,000).

Product names emphasize the "sealed in" quality of the dry flavors. Dodge & Olcott calls its line of spray-dried flavors Dolcoseal, Alva Flavor Division of van Ameringen-Haebler (one of the pioneers in dry flavors in the U.S.) has Sealva Flavor, Syntomatic has Micro-Captive, Norda (one of the largest in the field) has Norda Nodes and Givaudan-Delawanna has Permaeal.

The future for all of these concentrated flavor products looks good. Foods that can be prepared speedily and easily are housewives' favorites.

facts you should know
about dryers . . .



**BUILDING A DRYER
TO ANSWER
YOUR DRYING PROBLEMS**

For over 55 years, Louisville Dryers have been solving industry's drying problems and effecting marked economies. The following is intended as an introduction to selecting the right type of dryer.

Q. *Since my required production capacity indicates a continuous dryer will give lowest drying cost, which design is best for my purpose?*

A. Assuming the material is in bulk form, a rotary type dryer is best for your purpose. It is almost axiomatic that materials suited to drying in rotary dryers are dried at lowest overall cost in that type.

Q. *If I consider a rotary dryer, should it use high temperature furnace gases or low temperature warm air to dry my material?*

A. This will depend on your particular material, for instance—

1. The temperature to which it can be heated without injury.

2. The amount of moisture in the wet material.

3. The material temperature necessary to dry the material to the desired final moisture content.

4. Whether or not the material will be contaminated by contact with combustion gases.

Q. *I think my material will not be injured by gases from an oil furnace. Should I use a parallel or counter current rotary dryer?*

A. This will depend on a number of considerations, such as:—

1. Is the material flammable?

2. How dry must the product be?

3. Is the dried product dusty or is it granular with very small percentage of "fines?"

4. Will "case hardening" occur in high temperature atmosphere inhib-

iting uniform and complete drying of large lumps and particles?

Q. *There seems to be quite a number of conditions affecting the selection of the proper dryer type.*

A. Very true. And the conditions involved are not all included in the above discussion by any means.

Q. *How can I be sure of making the proper choice?*

A. An experienced drying engineer knows how to evaluate the various conditions involved in each drying problem and will make a sensible recommendation. If advisable he will also recommend pilot plant tests to confirm his conclusions.

Q. *How can I obtain such advice?*

A. Submit your problem to General American. An analysis and recommendation by a LOUISVILLE engineer entails no obligation on your part.



LOUISVILLE DRYING MACHINERY UNIT

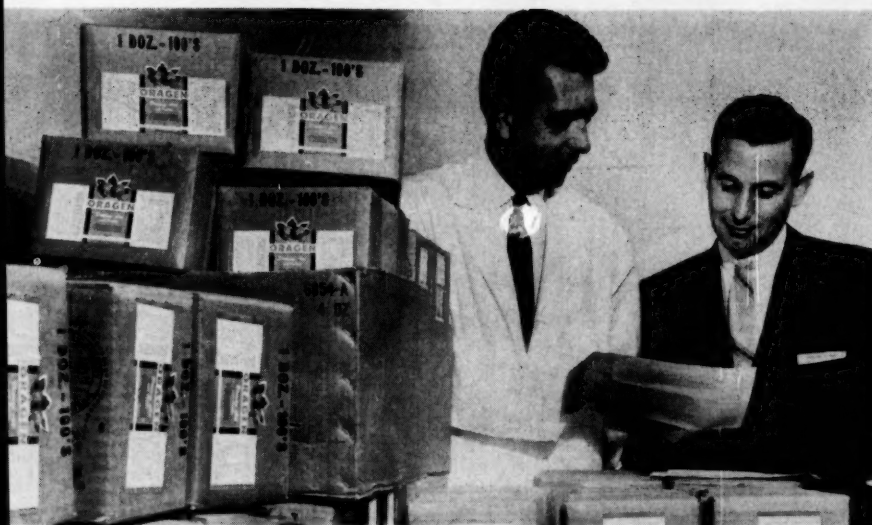
GENERAL AMERICAN TRANSPORTATION CORPORATION

Dryer General Sales Office: 139 So. Fourth Street, Louisville 2, Kentucky

Eastern Sales Office: 380 Madison Avenue, New York 17, New York

In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario, Canada

General Offices: 135 S. La Salle Street, Chicago 90, Illinois



Consumer's Harold Heldfond (right) discusses production of Oragen.

Putting Stock in Citrus

Next spring, a product so far available only in regional markets will make its national debut. Before it bows nationally, however, the market will be softened up by a carefully tested, three months' advertising campaign. It's all part of a program that has, sectionally at least, enabled the specialty to rack up sales that in some cases exceeded the volume of all competing products combined.

The promising new product is Oragen, an appetite suppressor and reducing aid, and it's put out by newly formed Consumer Drug Co. (Portland, Ore.).* Oragen's the first of a series of citrus-based proprietaries that Consumer is launching in an effort to gain a top spot in over-the-counter drug sales.

Pulp Find: Oragen is just one of the many products that owes its beginnings to work done at the Sunkist Laboratories in California. Starting with the finding by Sunkist researchers that some of the by-products of the citrus industry (pulp-derived pectin cellulose complex and dried protopectin complex orange) increased bulk and fluid retention of the intestinal tract, brothers Harold and R. C. Heldfond set out in early 1955 to see if this characteristic

could be used in weight reduction.

Use of the citrus by-products as gastrointestinal remedies and bulk laxatives, in controlling postoperative bleeding and as a plasma extender had proved successful, but nobody had tried them in the reducing field.

The Heldfonds enlisted the help of a research consultant from Oregon State University. He soon came up with what looked like a useful formula for an appetite appeaser, in which the orange derivative appeared to have almost 16 times the swelling power of materials found in competing products.

Eyes Wide Open: The Heldfonds, as owners of a retail drug store in downtown Portland, had plenty of experience with the hazards of marketing proprietary products. Nevertheless, the weight reducer looked so good that they went ahead, sent out samples for testing by clinics, hospitals, and private physicians.

When these trials seemed to bear out research findings, the product was put into limited production and marketed in the Portland area for nearly a year to test customer reaction, advertising effectiveness, and to gauge repeat business. When the product racked up sales bigger than all competing products combined, the Heldfonds set up Consumer Drug Co. specifically to market it.

After the Northwest area sales were well under way, some West Coast cities became the sales targets. Then Consumer tried cities in the Midwest. At present, sales distribution is handled in the Pacific Northwest by the company's own sales staff; elsewhere, it is set up through established manufacturer's representatives. In Los Angeles and San Francisco, the firm is represented by Coast Mountain Sales; in the Midwest, by Keystone Midwest. All recognized drug and department store outlets sell the product. There's no mail-order business.

To back up salesmen, the new company has gone in extensively for advertising and promotion. In Los Angeles, orange-scented newspaper ads were used; in Seattle and San Francisco, weight reduction contests were staged, with trips to Hawaii for the winners.

Besides the newspapers, the company also has used radio personalities, and in some areas, daily five-minute TV weather programs. In all its promotion, the company tries to avoid receiving the "stigma" sometimes attached to proprietary reducing aid advertising. An example: Consumer won't use the "before" and "after" techniques in its ads.

Harold Heldfond reports that Oragen sales have been climbing steadily throughout the year. Sales growth is slightly accelerated (a seasonal boost) in the summer months—people become more aware of their flabbiness when they get into swim suits, and tend to turn to reducing aids.

Solid Expansion Basis: In explaining how the company has managed to avoid some of the pitfalls that catch many fledgling outfits, Heldfond gives much of the credit to Henry Cohen, the company's secretary-treasurer. Under Cohen, the company has built fast, but on firm foundations.

It won't enter a new market until the preceding market area has been thoroughly consolidated—so that its sales pay for its own advertising and financing. Says Cohen: "Each new market is like going into business for the first time. We open another area as a retailer would open another store."

When the product goes national, the company, projecting sales figures,

*Production of the product is handled by Don Hall Laboratories, a Portland specialty pharmaceutical manufacturer which has its own line of products, but which also does private formula work. Mr. Hall is at left in photo above.

P

Eastman

raw materials for the
pharmaceutical
industry

Eastman

CHEMICAL PRODUCTS, INC.

KINGSPORT, TENNESSEE

subsidiary of EASTMAN KODAK COMPANY

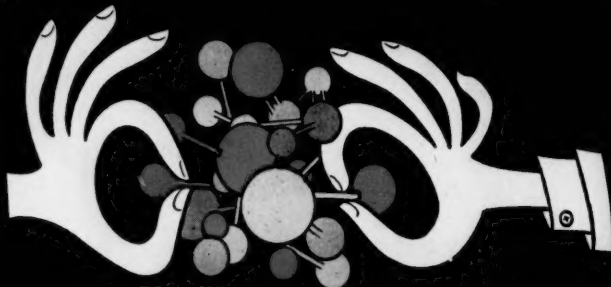
For information about these
and other Eastman chemical
products, call our nearest
sales representative or
write to Eastman Chemical
Products, Inc., Chemicals
Division, Kingsport, Tennessee

	SOLVENT	ACETYLATING AGENT INTERMEDIATE	DEHYDRATING AGENT STABILIZER		
acetaldehyde			•		
acetanilide			•		
acetic acid	•		•		
acetic anhydride			•		•
acetone	•	•			
benzoquinone		•			
ethyl acetate	•				
ethyl alcohol	•	•			
isobutyl acetate	•				
isobutyl alcohol	•				
isobutyraldehyde		•			
isopropyl acetate	•				
Tenox [®] antioxidants				•	
oxidized cellulose					HEMOSTATIC AGENT AND ADSORBENT

Sales Offices: Eastman Chemical Products, Inc.,
Kingsport, Tenn.; New York City; Framingham, Mass.;
Cincinnati; Cleveland; Chicago; St. Louis; Houston,
West Coast: Wilcoxon-Rayner Co., San Francisco;
Los Angeles; Portland; Salt Lake City; Seattle.

MIN CHEMISTRY at work

case: Sticky chemicals--and how a small quantity of M&C anti-caking agent will keep them free-flowing



Waxy, hygroscopic, sticky chemicals can clog up mills, form hard masses in plant equipment, ruin "shelf life," or make products hard to use.

Conditioner Report: M & C anti-caking agents are low-priced, neutral-colored, uniform, ultra-fine, grit-free, water-insoluble, inert materials. Through coating with these powders that stick where they're put, chemicals are "conditioned" against "tombstoning" caused by time of storage, pressure, atmosphere, temperature fluctuation, etc.

Due to light weight, high sorptivity, etc., often only 1% or less is needed for good conditioning of ammonium nitrate crystals or prills, ammonium sulfate, metallic and other soaps, resins, plastics, fertilizers, sulfur, napalm, chemicals for pest control and fire fighting, many others.

Our business is to supply nature-given materials that are process-engineered to make things go smooth in your plant... good in your markets. Use the coupon.

MINERALS & CHEMICALS CORPORATION OF AMERICA
3146 Essex Turnpike, Menlo Park, N.J.

I'm interested in a natural mineral product for _____

Sends: ☐ Detailed anti-caking literature ☐ Free samples

name _____ title _____

company _____

address _____

city _____ zone _____ state _____

For more data, see
*Chemical Materials
Catalog*
Pages 330-334



MINERALS & CHEMICALS

CORPORATION OF AMERICA
3146 Essex Turnpike, Menlo Park, N.J.

Leaders in creative use of non-metallic minerals

ATTAPULGITE (Attapulgas)

ACTIVATED BAUXITE (Porocel)

KAOLIN (Edgar • ASPs)

LIMESTONE (Chemstone)

SPEEDI-DRI FLOOR ABSORBENTS

SPECIALTIES



HAROLD HELDFOND: The orange is keeping him in the black.

expects to gross \$3.5 million/year. As for the firm's over-all goal in the field, Helffond smiles and says, "To be the No. 1 pharmaceutical sales corporation in the United States."

Discussing the growth of his company from a three-man outfit to its 125 employees today, Harold Helffond told *CW*, "I didn't think two years ago that I would be devoting all my time and money to a proprietary item."

Eventually, the company proposes to use the citrus derivatives to help it enter three other fields of proprietary medicines: pain relief, sleep induction, and general tonics.

The tremendous growth of the canned and frozen juice business assures the firm of a secure supply of its basic raw material, citrus fruit rinds. Prices, too, are relatively stable, although Consumer has had to absorb several price increases in order to keep Orogen at the advertised price.

Already, the company has two more pulp-derived products undergoing clinical tests. (At least one of these products is thought to have a greater sales potential than Orogen.)

The next product likely to receive the company's full campaign will be Prolief, a citrus-based analgesic to relieve the pains of rheumatism, arthritis, etc. Already sold in some stores, Prolief's big push has not yet begun. But when it starts, Consumer figures it will be well on its way toward a top drug sales spot.



*“Our greatest challenge . . .
the development of men”*

Ralph Cordiner, President, General Electric Company

“Few expenditures we can make are more important than those for education. A well-educated person produces more and consumes more, makes wiser decisions at the polls, mounts a stronger defense against aggression, and is better able to perform the grave responsibilities of American citizenship.

“Freedom needs educated people. So do business and industry. I earnestly ask you to support the college or university of your choice in its planning for expansion and a stronger faculty. The returns will be greater than you think.”



If you want more information on the problems faced by higher education, write to: Council For Financial Aid To Education, Inc., 6 E. 45th Street, New York 17, New York



Sponsored as a public service, in cooperation with the Council for Financial Aid to Education

EMPLOYMENT OPPORTUNITIES IN THE CHEMICAL PROCESSING INDUSTRIES

● **Closing Date**—Each Tuesday, 11 days prior to publication date.

POSITION OPEN TECHNICAL SERVICE MANAGER for COLOR PIGMENT MAKER

This position will be filled during the next 9 to 12 months. We are interested in men with a broad technical background in paint, resin, or ink manufacturing. Specific technical schooling in organic chemistry, physical chemistry is important. Age is not important, but men under 40 preferred. Salary is open up to \$12,000 yearly. Applicants please give details of experience and education. Include transcript of college or university credits and photo when applying. Address all correspondence to Sevier Bonnie, Jr., Asst. Sales Manager — Kentucky Color & Chemical Co., Louisville 12, Ky.

WANTED GENERAL SUPERINTENDENT

for Seawater Magnesia and Basic Brick plant operation. Location—Gulf Coast.

Applicant should be 35 to 45 years old and should have technical education with extensive operational experience in Refractories industry. Experience in manufacturing of basic refractories desirable but not essential. Applicant should have knowledge through education or previous experience of inorganic chemical process technology.

Please submit replies stating educational background, previous experiences, and salary desired to:

P-5718 CHEMICAL WEEK
Class. Adv. Div., P.O. Box 12,
N.Y. 36, N.Y.

POSITION OPEN TECHNICAL SERVICE MANAGER for COLOR PIGMENT MAKER

This position will be filled during the next 9 to 12 months. We are interested in men with a broad technical background in paint, resin, or ink manufacturing. Specific technical schooling in organic chemistry, physical chemistry is important. Age is not important, but men under 40 preferred. Salary is open and will be commensurate with background and experience. Applicants please give details of experience and education. Include transcript of college or university credits and photo when applying. Address all correspondence to Sevier Bonnie, Jr., Asst. Sales Manager — Kentucky Color & Chemical Co., Louisville 12, Ky.

Positions Vacant

Opening for research and development chemist experienced in the manufacture and various uses of protective coatings, wax, wax compounds, resins, polymer dispersions, plastic, and bituminous materials in industrial manufacturing company laboratory located in Middle West. Apply by letter giving full details of education and experience. All replies will be confidential. P-5213, Chemical Week.

Terminal Manager—Aggressive Bulk Transporter Acids—Chemicals—Petro—Midwest—Fleet Experience Essential—Salary and Incentive. Send resume to Eldon Miller, Inc. P. O. Box 232, Iowa City, Iowa.

Sales Executive—Do you know how to organize and direct a national marketing program for selling chemicals to industrial users and formulators and desire an outstanding opportunity? The executive we seek is under 35, with chemistry or chemical engineering degree and has not less than five years experience in chemical sales. Write in confidence to: Cherokee Laboratories, Inc., 3021 San Springs Road, Tulsa, Oklahoma.

Selling Opportunity Offered

Sales Representatives—Manufacturers' Sales Representatives wanted by AAA-1 manufacturer of a new and proven wet scrubber-type dust collector line. Current representation of dry type collection equipment or experience in dust-fume collection required. Areas available—New England, Eastern Pennsylvania and Southeast. RW-5670, Chemical Week.

Position Wanted

Chemical Literature and Patents: Prompt Searching and Evaluation. Ph.D. organic chemist, diversified industrial experience, research and consulting work; can use the best libraries in the New York Metropolitan area. PW-5692, Chemical Week.

REPLIES (Box No.): Address to office nearest you
*In This Publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

For Sale

One ton standard Marion mixer, steel plow blades 10-H.P. motor, center discharge. Summit Chemical Corp., 278 Van Brunt St., Brooklyn 31, N. Y. Main 5-0122.

Dehydrated Cob Meal: Uniform, moisture-controlled carrier and diluent. Clean, absorbent, low-cost. Paxco, Box 120, Paxton, Ill.

48" dia. Copper Bubble Cap Plate Rectifying Column; also 48" dia. copper Beer Still. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

Nash Hytor Vacuum Pumps, size 28; capacity approx. 2200 CFM @ 16.5 Hg. Perry, 1415 N. 6th St., Phila., Pa.

Hardinge 10' dia. x 96" long Conical Pebble Mill. Built 1954. Perry, 1415 N. 6th St., Phila., Pa.

DON'T FORGET

the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

TRACERS

TO THE
CHEMICAL PROCESSING INDUSTRIES

- **Displayed Rate**—\$19.50 per inch. Contract rates on request. Not subject to Agency Commission.
- **Undisplayed Rate**—\$18.0 a line; minimum, 3 lines.
- **Box Numbers**—Count as one additional line in undisplayed ads.
- **Closing Date**—Each Tuesday, 11 days prior to publication date.

SURPLUS WANTED

CHEMICALS, PHARMACEUTICALS, OILS
PLASTICIZERS, RESINS, DYES
SOLVENTS, PIGMENTS, ETC.

CHEMICAL SERVICE CORPORATION
96-02 Beaver Street, New York 3, N. Y.
MA 2-6970

SURPLUS CHEMICALS WANTED

Chemicals—By-Products—Plasticizers

Pigments—Resins—Solvents

CHEMSOL, INC.

70 Dod Street, Elizabeth N.J. EL 4-7654

WANTED TO PURCHASE

By a large manufacturing concern. A small operating Chemical Research Laboratory, staffed and equipped. Must have some color and dyestuff experience. Knowledge of Waxes and Oils also desirable.

BO-5689 CHEMICAL WEEK

Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WE WANT, ON JOBBING OR AGENCY BASIS,
CHEMICALS FOR ELECTRONICS INDUSTRY.

WE ARE MANUFACTURING A SHORT LINE BUT
CAN GIVE COMPLETE COVERAGE IN NORTH-
ERN CALIFORNIA.

THE ELECTRONIC CHEMICALS COMPANY, 2077
BAY ROAD, EAST PALO ALTO CALIFORNIA.

RUST PREVENTIVE FOR BRIGHT METAL PARTS

Make your own, on formulae proved successful
over entire world for past 30 years, at cost of
68¢ per gallon. Manufacturer retiring will sell
complete directions \$75.00.

CAFCO 39 Cortlandt St. N.Y.C. 7

BUYERS OF CHEMICALS CHEMICALS—OILS—SOLVENTS

DRUGS—RESINS—WAXES
PLASTICS—COLOR—ETC.

BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street New York 13, N. Y.
WORTH 4-5120

MONTMORILLONITE

We own mining property in Nevada containing approximately 1,000,000 tons of highest quality Montmorillonite Clay. Property has been thoroughly surveyed, drilled, and blocked out. Clay has been tested and proven highly efficient for catalyst or filtering. We desire to lease or sell property.

KINNEY INDUSTRIES

410 Solano Avenue
Los Angeles 12, California

FOR RENT
New, Modern
Factory Building
6,000 SQ. FT.
Ideally Suited to
Chemical Industry

Just completed at 8019 N. Monticello Ave., Skokie. One story, brick and steel. Insulated ceiling. Large private parking area. Choice location, convenient to top-calibre labor pool. CTA bus and Irving-Park-Evanston bus to door. Immediate occupancy. Attractive lease.

Write or Phone

ROGAN BROTHERS
 8025 N. Monticello Ave. Skokie, Ill.
 Phone: ORchard 5-1233

Commercial Quantities
Isomerically Pure
 • iso amyl amine
 • n amyl amine
 • 2 methyl butyl amine



Available in
 Developmental Quantities
 n heptyl amine
 n nonyl amine

FREEMAN INDUSTRIES, Inc.
 TUCKAHOE • N.Y. • WO1-2100

SOLVENTS WANTED

Spent Solvents — By-Products
 Plasticizers—Resins—Waste Thinners
ABBEY CHEMICAL CORP.
 Union, New Jersey MURdock 8-3629

THIS TRACER SECTION

can be used whenever you are looking for or offering

EQUIPMENT

SUPPLIES

OPPORTUNITIES

PLANTS

CHEMICALS

SPECIAL SERVICES

The rates are low—just call or write

CLASSIFIED ADVERTISING DIVISION
CHEMICAL WEEK

P. O. Box 12, LOngacre
 NY 36 NY 4-3000

MANAGEMENT
SERVICES

- General Consulting
- Management
- Patents
- Systems Engineering
- Chemical & Bacteriological Analysis
- Instrumentation
- Equipment Design
- Catalyst Development
- Translation

Clark Microanalytical Laboratory

Routine analyses in one week

CH, N, S, Halogen, Fluorine, Oxygen, Alkoxyl, Alkylamide, Acetyl, Terminal Methyl, etc. by specialists in organic microchemical analysis.

HOWARD S. CLARK, DIRECTOR

P. O. Box 17 Urbana, Ill.

CORELL AND JONES

ENGINEERS

Power — Maintenance

Chlorine — Soda Ash — Perchloroethylene

Pigments and Related Products

Design — Reports — Operation

413 Rose Blvd.
 Akron, Ohio

Tels: Akron, O. TE 64271
 Wadsworth, O. FE 56542

JACOBS ENGINEERING COMPANY

CHEMICAL ENGINEERS

Chemical plant design. Feasibility and Market studies.

Specialists in Pacific Coast chemical industry.

774 East Green Street Pasadena, Cal.

J. B. DURRA & CO.

Consultants To The Plastics Industry

Market Research • Market Development • Product Development & Evaluation • Marketing Services
 Financial Analysis

77 W. Washington St. Chicago 2, Ill.
 ANDover 3-2897

WALTER KIDDE CONSTRUCTORS, INC.

Engineers—Builders

chemical—process—paper

New York City

Houston, Tex. Baton Rouge, La.

JAMES P. O'DONNELL

Consulting Engineer

Professional Engineering for the
 Petroleum and Process Industries

39 Broadway

New York 6, N. Y.

Beaumont, Texas Tulsa, Oklahoma

SIRRIE

ENGINEERS

Plant design & Surveys covering Chemical Elec-
 trochemical and Metallurgical Production; Indus-
 trial Waste Disposal; Water Supply & Treatment;

Analysis & Reports

J. E. SIRRIE CO.

Greenville

South Carolina

Professional
Assistance

in solving your most difficult problems
 is offered by consultants whose cards
 appear in this section.

SPECIALTIES

PRODUCTS

Quick Getaway: Fasson Products (Painesville, O.) is offering a new non-stick paper for manufacturers and packagers of sticky materials, such as synthetic and natural rubber, asphalts and tars, gums. The material comes with either one or both sides coated with release agent.

Textile Resin: Warwick Chemical Division of Sun Chemical is showing its new low-cost anticreasing agent for cellulose fibers. Tradenamed Warcoset LCR, the product is recommended for both cotton and viscose. It's a clear liquid resin, formulated to have a low free-formaldehyde content. Feature: good chlorine resistance.

Silicone Softener: A nonyellowing, stain-resistant silicone fabric softener, Zacone, has just been put into commercial production by Zimmerman Associates (Guilford College, N.C.). According to the company, the product forms true aqueous solutions with excellent stability to heat, salts, dye fixatives, etc. The company believes that potential uses exist in the cosmetic, paper and glass-resin fields.

Emulsifiable Wax: Petronauba H is the latest addition to Bareco's line of emulsifiable microcrystalline waxes. Made from a fraction of Fischer-Tropsch-derived wax, the product is intended primarily for use in emulsion floor polishes. Melting point is 195 F; acid number, 15/25; saponification number, 50/60. Color: yellow.

Petroleum Solvents: Shell Oil is now producing three new petroleum solvents for the paint and dry-cleaning industries. Shell-Sol 36 is suggested for special-purpose industrial finishes, printing inks, dry-cleaning soaps and fluids. Shell-Sol 14 is for enhancing "wet edge" characteristics in interior architectural finishes. Shell-Sol 71, said to be completely odorless, is recommended for architectural finishes, varnishes and enamels. It can also be used in dry-cleaning soaps, household cleaners, polishes and waxes, where lack of solvent odor is desirable.

CHEMICAL WEEK • ADVERTISERS INDEX

August 3, 1957

AMERICAN AGRICULTURAL CHEMICAL CO., THE 60 Agency—L. W. Ramsey Adv. Agency	GIRDLER CO. THE 2 Agency—The Griswold-Eshleman Co.	TEXAS GULF SULPHUR CO. 69 Agency—Sanger, Funnell, Inc.
AMERICAN CYANAMID CO. 6-7 Agency—Hazard Adv. Co.	GOODRICH-GULF CHEMICALS INC. 37 Agency—The Griswold-Eshleman Co.	THIokol CHEMICAL CORP. 73 Agency—Kelly Nason Inc. Adv.
AMERICAN POTASH & CHEMICAL CORP. 4,5 Agency—McCarty Co.	GOODYEAR TIRE & RUBBER CO. 1 Agency—Kudner Adv. Agency	TITANIUM PIGMENT CORP. 67 Agency—Doyle, Kitchen & McCormick Inc.
ARMOUR LABORATORIES, THE 50 Agency—Jordan-Sieber & Corbett, Inc.	GROSS & CO. A. 68 Agency—G. M. Basford Co.	UNION CARBIDE CHEMICALS CO. DIV. OF UNION CARBIDE CORP. 31 Agency—J. M. Mathes, Inc.
ATLANTIC REFINING CO. 79 Agency—N. W. Ayer & Son Inc.	GULF OIL CORP. 47 Agency—Ketchum, MacLeod & Grove Inc.	WESTVACO MINERAL PRODUCTS DIV. FOOD MACHINERY & CHEMICAL CORP. 41 Agency—James J. McMahon, Inc.
BADGER MFG. CO. 3rd Cover Agency—F. P. Walther Jr. & Assoc.	HERCULES POWDER CO. 19 Agency—Fuller & Smith & Ross, Inc.	WOLF & CO., JACQUES 76 Agency—Riedl & Freede, Inc.
BAKER CHEMICAL CO. J. T. 43 Agency—Wildrick & Miller Inc.	HEYDEN NEWPORT CHEMICAL CORP. 4th Cover Agency—O. S. Tyson & Co. Inc.	WYANDOTTE CHEMICAL CORP. 14-15 Agency—Brooke, Smith, French & Dorrance Inc.
BECCO CHEMICAL DIV. FOOD MACHINERY & CHEMICAL CORP. 77 Agency—John Mather Lupton, Inc.	HOOVER ELECTROCHEMICAL CO. 55 Agency—The Rumrill Co., Inc.	
BLOCKSON CHEMICAL CO. 8 Agency—Wm. Balsam Adv.	INTERNATIONAL NICKEL CO. 49 Agency—Marshalk & Pratt Co., Inc.	tracers SECTION (Classified Advertising) F. J. Eberle, Business Mgr.
COMMERCIAL SOLVENTS CORP. 29 Agency—Fuller & Smith & Ross, Inc.	JEFFERSON CHEMICAL CO. 70 Agency—Hazard Adv. Agency	CHEMICALS: Offered/Wanted 86
CONSUMERS POWER CO. 13 Agency—Commonwealth Service, Inc.	KELCO CO. 54 Agency—Cayton Inc. Adv.	EMPLOYMENT 86
DISTILLATION PRODUCTS INDUSTRIES, DIV OF EASTMAN KODAK CO. 20 Agency—The Rumrill Co., Inc.	LUCIDOL DIV. OF WALLACE & TIERNAN INC. 80 Agency—Barber & Drullard Inc.	EQUIPMENT: Used/Surplus New For Sale 87
DORR-OLIVER, INC. 10 Agency—Sutherland-Abbott Adv.	LUMMUS CO. THE 16 Agency—G. M. Basford Co.	WANTED 86
DOW CHEMICALS CO. 39, 59 Agency—MacManus, John & Adams, Inc.	MINERALS & CHEMICALS CORP. OF AMERICA 84 Agency—Richardson, Thomas & Bushman	MANAGEMENT SERVICES 87
EASTMAN CHEMICAL PRODUCTS INC. 83 Agency—Fred Wittner, Adv.	MONSANTO CHEMICAL CO. 9 Agency—Gardner Adv. Co.	SPECIAL SERVICES 86
EMERY INDUSTRIES, INC. 12 Agency—Ruthrauff & Ryan, Inc.	PENNSYLVANIA INDUSTRIAL CHEMICAL CORP. 53 Agency—Downing Industrial Adv., Inc.	
ENJAY CO. 35 Agency—McCann Erickson, Inc.	PFIZER & CO. 45 Agency—MacManus, John & Adams Inc.	ADVERTISING STAFF
FISHER SCIENTIFIC CO. 36 Agency—Smith, Taylor & Jenkins, Inc.	PROPORTIONEERS, INC., DIV. OF B-I-F INDUSTRIES, INC. 80 Agency—Horton, Church & Goff, Inc.	Atlanta 3 Robert H. Powell 1301 Rhodes-Haverty Bldg., JACKSON 3-6951.
FIRESTONE TIRE & RUBBER CO. THE SYNTHETIC RUBBER & LATEX DIV. 57 Agency—Sweeney & James Co., Adv.	SHEA CHEMICAL CO. 63 Agency—Doe Anderson Adv. Agency	Boston 16 350 Park Square Building, Paul F. McPherson, Hubbard 2-7160
FRITZSCHE BROTHERS, INC. 80 Agency—Calson Adv. Corp.	SHELL CHEMICAL CORP. 2nd Cover Agency—J. Walter Thompson Co.	Chicago 11 Alfred D. Becker, Jr. R. J. Claussen, 520 N. Michigan Ave., MOhawk 4-5800
GAYLORD CONTAINER CORP. 38 Agency—Oakleigh R. French & Assoc. Inc.	STAUFFER CHEMICAL CO. 11 Agency—John Mather Lupton Co.	Cleveland 15 Vaughn K. Disette, 1510 Hanna Bldg. Superior 1-7000
GENERAL AMERICAN TRANSPORTATION CORP. LOUISVILLE DRYER DIV. 81 Agency—Edward H. Weiss & Co.	SWIFT & CO. 51 Agency—Russell T. Gray, Inc.	Dallas 1 Gordon L. Jones, The Vaughn Bldg., 1712 Commerce St., River- side 7-6117
GENERAL MILLS, INC. 26 Agency—Knox Reeves Adv., Inc.	TENNESSEE CORPORATION 44 Agency—Crawford & Porter, Inc.	Denver 2 1740 Broadway ALpine 5-2981

ADVERTISING STAFF

Atlanta 3 Robert H. Powell
1301 Rhodes-Haverty Bldg., JACKSON 3-6951.

Boston 16 350 Park Square Building,
Paul F. McPherson, Hubbard 2-7160

Chicago 11 Alfred D. Becker, Jr.
R. J. Claussen, 520 N. Michigan Ave.,
MOhawk 4-5800

Cleveland 15 Vaughn K. Disette,
1510 Hanna Bldg. Superior 1-7000

Dallas 1 Gordon L. Jones, The
Vaughn Bldg., 1712 Commerce St., River-
side 7-6117

Denver 2 1740 Broadway
ALpine 5-2981

Detroit 26 856 Penobscot Bldg.,
H. J. Sweger, Jr., WOodward 2-1793

London H. Lagler, McGraw-Hill House
95 Farringdon St., E.C. 4, England

Los Angeles 17 John B. Uphoff, 1125
West Sixth St., MADison 6-9351


New York 36 Knox Armstrong,
P. F. McPherson, Charles F. Onasch,
L. Charles Todaro, 500 5th Ave. OXFord 5-6959

Philadelphia 3 William B. Hannum, Jr.
Architects Bldg., 17th & Sansom Sts.,
Rittenhouse 6-0670

Pittsburgh 22 V. K. Disette, Room 919
Oliver Bldg., ATLantic 1-4707

San Francisco 4 William C. Woolston,
68 Post St., DOuglas 2-4600

St. Louis 8 3615 Olive St.,
Continental Bldg., R. J. Claussen, JEF-
erson 6-4867



Fresh Perspective...

Perspective view of the raising of two of four 200 foot columns at Cosden Petroleum Corporation's new Ultra-fractionation and styrene manufacturing plant (Big Spring, Texas). Designed and built by Badger, this plant uses a daring new processing concept to make styrene directly from gasoline! Brochure available on request.

+ The ability to put engineering problems in a *fresh perspective* — to subject them to a point of view that leads to new solutions — is at the root of Badger accomplishments like these:

- ... a commercially practical method of separating ethylbenzene from gasoline by Ultra-fractionation.
- ... a continuous process for producing sodium-hydrogen compounds.
- ... the successful application of a new process for deriving high quality light oils from coal — without acid treating.

An intangible that has been called "The Precious Plus behind a Badger blueprint," this refreshing ability to apply *new* thinking to difficult engineering problems has produced two important results:

1. Top petroleum and chemical processors are securing better processes, more economical plants.
2. Badger has become one of the world's fastest growing contract engineering firms.

Whether your project is commonplace or complex, calling in Badger is the first step toward securing the precious advantages

that can come only from taking a *fresh perspective*.

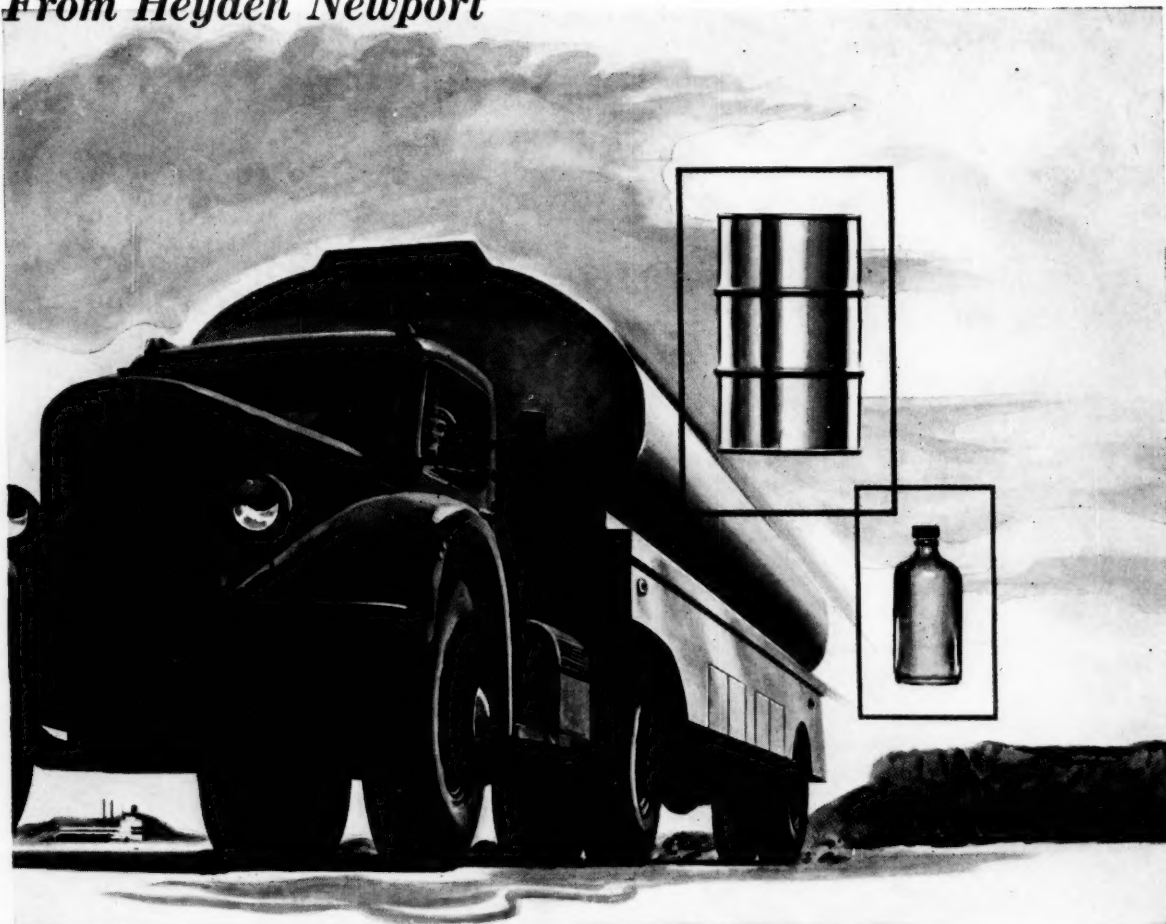
Badger's Key Man Operating Policy: "The Badger man who submits your proposal is always a Badger principal — always the Key Man responsible for the execution of your job."

BADGER MANUFACTURING COMPANY

230 Bent St., Cambridge, Mass.
New York, N.Y. • Houston, Texas
IN EUROPE: Badger-Comprimio N.V., The Hague
Badger-Comprimio S.A., Antwerp

ENGINEERS • CONTRACTORS • DESIGNERS • MANUFACTURERS

From Heyden Newport



SALICYLALDEHYDE

A NEW SOURCE • A NEW PROCESS • A NEW PLANT

A new plant to give you high quality, readily available Salicylaldehyde will be in operation at Heyden Newport to supply your needs in 1958.

Modern plant facilities, strictest quality control, and our long experience in the manufacture of quality products will be your assurance of complete dependability with this versatile chemical.

As a reactive intermediate, Salicylaldehyde (o-hydroxy-

benzaldehyde) has found extensive use in the preparation of coumarin, pharmaceuticals, dyestuffs, and additives for the rubber and petroleum industries. Salicylaldehyde likewise serves the essential oil and plating industries.

Let Heyden Newport fill your requirements for Salicylaldehyde—your products and processes will benefit from quality protection and assurance of adequate supply.

Write today for samples and technical data.

Ⓔ 4889

HEYDEN NEWPORT
CHEMICAL CORPORATION
342 Madison Avenue • New York 17, New York

Where tradition meets tomorrow in chemical progress

